BLM

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

Cave Valley and Lake Valley Watershed Restoration Plan Environmental Assessment

DOI-BLM-NV-L020–2011–0021–EA

November 5, 2012

PREPARING OFFICE

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Table of Contents

List of Figures

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List of Maps

List of Tables

Chapter 1. Introduction

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1.1. Identifying Information

1.1.1. Title and EA number

Cave Valley and Lake Valley Watershed Restoration Plan Preliminary Environmental Assessment
DOI-BLM-NV-L020-2011-0021-EA

1.1.2. Location of Proposed Action

Cave Valley and Lake Valley Watersheds, located south of Ely, Nevada administered by the Schell Field Office, Ely District. See Map 1.1, “Cave Valley and Lake Valley Watershed Project Area” (p. 3).

1.1.3. Name and Location of Preparing Office

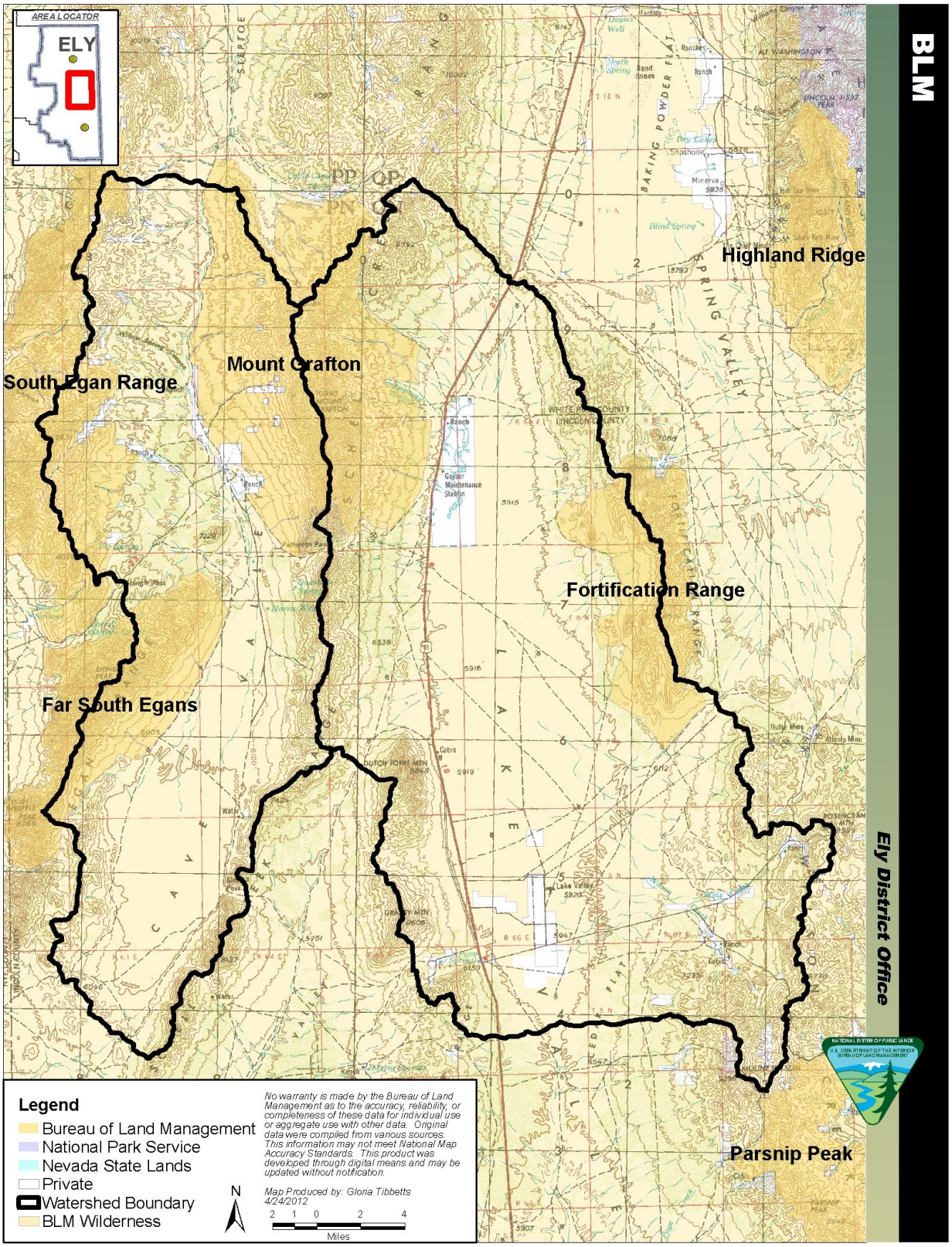
Lead Office - Schell Field Office
702 N. Industrial Way
HC 33 Box 33500
Ely. NV 89301
(775) 289–1800

1.2. Introduction

The project area analyzed in this environmental assessment (EA) consists of the Cave Valley and Lake Valley Watersheds which lie, south-southeast of the town of Ely, Nevada (see Map 1.1, “Cave Valley and Lake Valley Watershed Project Area” (p. 3)). The Cave and Lake Valleys are two of sixty-one total watershed management units on the Ely District. Cave Valley is flanked by the South Schell Creek Mountains on the east and the South Egan Mountains on the west. Lake Valley is flanked by the Fortification Mountains and Wilson Creek on the east and the South Schell Creek Mountains and Fairview Mountains on the west. Each of the watersheds are characterized by generally north to south trending mountains, gently to steeply sloping benches and alluvial fans, and a valley bottom characterized by level to alluvial plains and alluvial flats. The watersheds drain internally into alkali sinks in the center of the valley. Elevations in the watersheds vary from about 5,900 feet in the valley bottom up to 11,735 feet on South Schell Peak in the southern end of the Schell Creek Range. Precipitation varies from a yearly average of about 6 to 12 inches on the valley bottoms to 14 to 20 inches or more on top of the South Schell Creek Mountains. Precipitation occurs as winter snow or spring/fall thundershowers and rains with the driest period occurring from mid-summer to mid-autumn. Average annual air temperature is from 40 to 50 degrees Fahrenheit, decreasing as elevation increases. The average frost-free season ranges from 100 to 120 days in the valley bottoms to 50 to 90 days in upper elevations.

Combined, the watersheds consist of approximately 583,832 acres. BLM administers about 96% of this area (561,372 acres) and about 4% (22,460) are private lands. The primary vegetation within the project area consists of sagebrush (*Artemesia* spp.) communities and established stands of singleleaf pinyon pine (*Pinus monophylla*) and Utah juniper (*Juniperus osteosperma*). The mix of grasses, forbs and shrubs in some vegetation communities are outside the desired range of conditions as described in the Ely District Resource Management Plan (RMP).

Regardless of the alternative selected, it is anticipated that the analysis conducted in this National Environmental Policy Act (NEPA) document would be valid until conditions in the analysis area change sufficiently to require additional NEPA analysis.



Map 1.1. Cave Valley and Lake Valley Watershed Project Area

1.3. Purpose and Need for Action

1.3.1. Vegetation Treatments

An interdisciplinary team consisting of Bureau of Land Management specialists and other parties conducted an assessment of the condition of the watershed beginning in 2005 and culminating in 2010. The results of this assessment indicated there are areas of the landscape where vegetative communities were not attaining the desired range of conditions for each community as specified in the Ely District Approved Resource Management Plan (RMP) (2008) (as discussed in Section 1.4).

The purpose and need for the proposal is to achieve the following objectives:

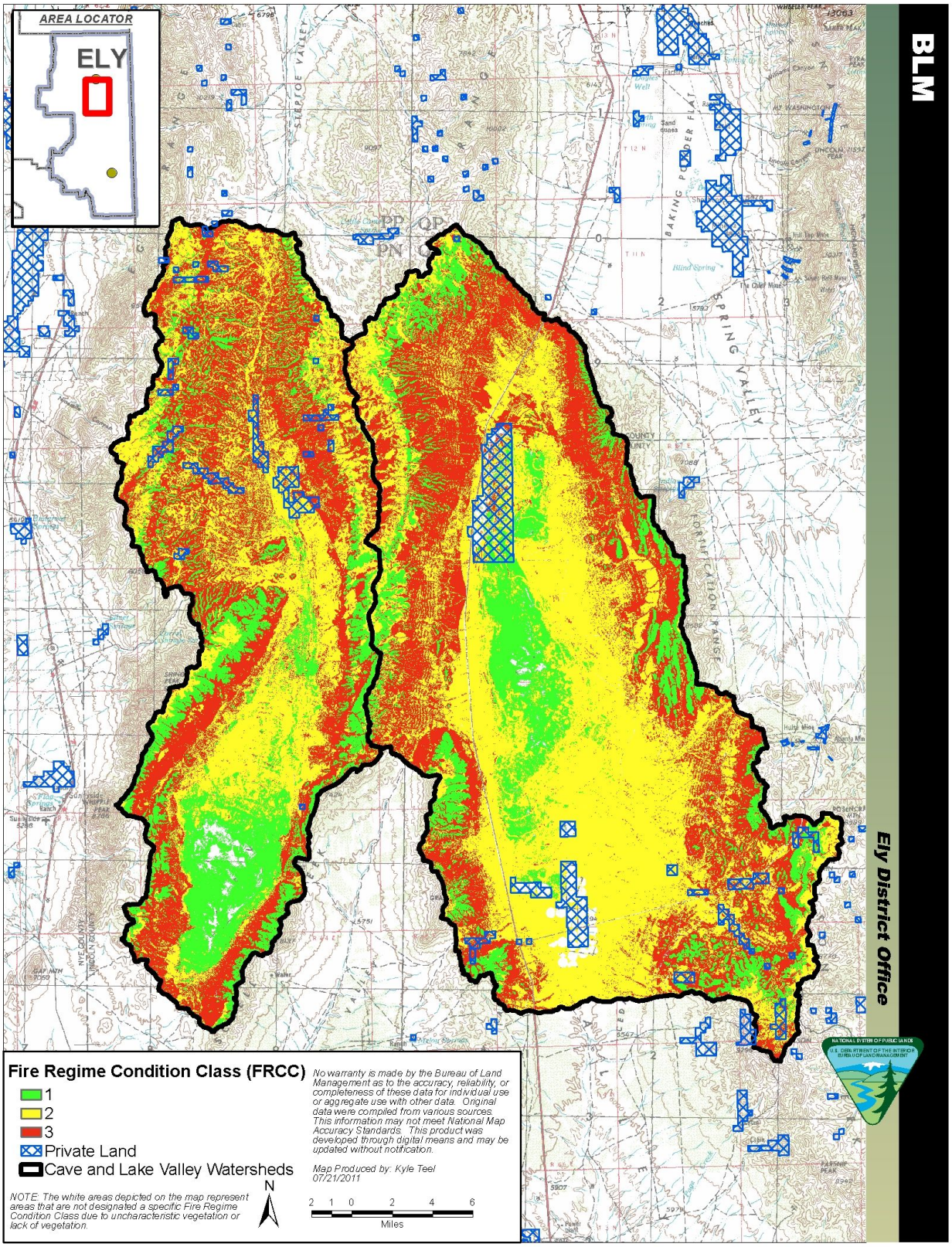
- Move the landscape within the Cave Valley and Lake Valley Watersheds toward FRCC 1 with a mosaic of seral stages attaining the potential cover percentages of grasses and forbs for the respective biophysical models.
- Improve habitat for all wildlife, especially sage grouse and big game species.
- Achieve better distribution for livestock and wildlife, and improve overall rangeland health.

One of the tools used to make the assessment of the watershed's condition is Fire Regime Condition Class (FRCC), which is an interagency, standardized tool based on scientific and peer reviewed literature for determining the degree of departure from a reference vegetation condition within a given biophysical setting (BPS). More information regarding this tool can be found at the following website: http://www.frcc.gov. Assessing FRCC can help guide management objectives and set priorities for treatments. The classification is based on a relative measure describing the degree of departure from the historical natural disturbance regime for a given BPS. This departure is described as changes to one or more of the following ecological components: vegetation characteristics (species composition, structural stages, stand age, canopy closure and mosaic pattern); fuel composition; fire frequency, severity and pattern; and other associated disturbances (e.g. insects and disease mortality, grazing and drought). There are three FRCC classes used to describe the departure from reference BPS conditions. The three classes are based on low (0-33% departure; FRCC1), moderate (34-66% departure; FRCC2) and high (67-100% departure; FRCC3) departure from central tendency of the natural (historical) regime. Low departure is considered to be within the natural (historical) range of variability, while moderate and high departures are outside the range of variability. The FRCC rating is accompanied by indicators of the potential risks that may result. Biophysical setting models have been developed for most major vegetation types. These models describe the vegetation, geography, biophysical characteristics, succession stages, disturbance regimes, and assumptions for each vegetation type (Havlina et al, 2010). Reference conditions described in the BPS models are compared to actual conditions for purposes of determining the current FRCC rating. A FRCC rating is determined for the entire watershed by determining the weighted average of all major vegetation FRCC ratings. FRCC 1 is desired for each BPS and for the entire watershed. A departure from FRCC 1 (reference condition) to FRCC 2 or FRCC 3 serves as an indicator that changes need to be affected.

Map 1.2, "Strata Fire Regime Condition Class (FRCC) for the Cave Valley and Lake Valley Watersheds" (p. 6) illustrates the moderate to high departure from natural conditions across the Cave Valley and Lave Valley Watersheds. The analysis of the watershed determined the causal factors for this departure to be a combination of drought, fire suppression efforts, and historic livestock overgrazing. Fire frequencies are departed from historical frequencies by multiple return intervals. The risk of losing key ecosystem components within the Cave Valley and Lave Valley Watersheds is considered moderate. Vegetation attributes have been altered from their

historical range and now include uncharacteristically high densities of trees and below normal levels of perennial grass and forb composition. The current watershed FRCC ratings for the Cave Valley and Lake Valley Watersheds are 20% FRCC 1, 45% FRCC 2 and 35% FRCC 3 with an overall departure of 58%. While the majority of the project area is FRCC 2, much of the FRCC 2 area is at the high end of the FRCC 2 range (departure scores of 34-65%). This suggests that management actions could prevent these ecosystems from departing further towards FRCC 3 and instead move toward a more ecologically sound condition.

Each vegetation type is stratified into succession classes or seral stages: A, B, C, D, E, and U. An "A" classification is a vegetative community in early succession (ecological condition immediately after disturbance) and seral classes represent varying seral states as vegetation progresses following disturbance. A "U" succession class is an uncharacteristic vegetation classification, meaning the percentage of exotic vegetation is high or desired understory vegetation is depleted. BPS models describe the typical distribution of succession classes that would be naturally exhibited across the landscape for each vegetation type based on natural disturbance regimes, geography, and other factors (Havlina et al, 2010).



Map 1.2. Strata Fire Regime Condition Class (FRCC) for the Cave Valley and Lake Valley Watersheds

Chapter 1 Introduction
Vegetation Treatments

November 5, 2012

1.3.2. Range Improvements

Much of the land administered by the BLM has had extensive spring development, well, pipeline, and reservoir rangeland improvement projects constructed in the 1950's and 1960's. Many of these water improvement projects are no longer functioning or are in need of substantial reconstruction. Since these projects were constructed prior to FLPMA and the need for cultural clearance, an EA is needed to authorize the reconstruction of the projects. This EA incorporates a variety of proposed range improvements including fence reconstruction, pipeline replacements, reservoir use authorizations, and a well authorization. The specific range improvements were selected for the purpose of improving livestock and wildlife distribution across the watersheds to support overall rangeland health. Studies have shown that distance from water directly correlates with percent utilization of livestock forage (Holechek *et al.* 2004). Increasing available water within an area provides for better distribution reducing negative impacts of concentrated livestock use and improving watershed health.

The BLM is considering the proposed range improvements to allow the permittees to comply with 43 CFR 4120. 3-1 (a), which states:

"Range improvements shall be installed, used, maintained, and/or modified on the public lands, or removed from these lands, in a manner consistent with multiple-use management."

1.4. Relationship to Planning

The project is in conformance with the Ely District Record of Decision and Approved Resource Management Plan (August 2008). The proposals being considered in this EA would help in achieving the following resource management goals identified in the Ely RMP:

Vegetation Resources

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.

Fish and Wildlife

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.

Special Status Species

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.

Forest/Woodland Products

Provide opportunities for traditional and non-traditional uses of vegetation products on a sustainable, multiple-use basis.

Watershed

Manage watersheds to achieve and maintain resource functions and conditions required for healthy lands and sustainable uses.

Fire

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.

Noxious and Invasive Weeds

Prevent the introduction and spread of noxious and invasive weeds. Control or eradicate existing populations.

Livestock Grazing

Manage livestock grazing on public lands to provide for a level of livestock grazing consistent with multiple use, sustained yield, and watershed function and health.

The project is in conformance with the following specific objectives and management decisions:

Vegetation Resources

General Vegetation Management

VEG-1: 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.

VEG-4: 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).

Fish and Wildlife

General Wildlife Habitat Management

WL-1: Emphasize management of priority habitats for priority species. (See the discussion on Vegetation Resources for the desired range of conditions for the various vegetation communities.)

Special Status Species

Parameter: Great Basin Sagebrush Habitat

SS-38: Maintain intact and quality sagebrush habitat. Prioritize habitat maintenance actions from the BLM National Sage Grouse Conservation Strategy to: 1) maintain large areas of high quality sagebrush currently occupied by greater sage-grouse; 2) maintain habitats which connect seasonal sagebrush habitats in occupied source habitats; and 3) maintain habitats that connect seasonal sagebrush habitats in occupied isolated habitats.

SS-39: Implement proactive and large scale management actions to restore lost, degraded, or fragmented sagebrush habitats and increase greater sage-grouse populations. Prioritize habitat restoration actions from the BLM National Sage Grouse Conservation Strategy to: 1) reconnect large patches of high quality seasonal habitats, which greater sage-grouse currently

occupy; 2) enlarge sagebrush habitat in areas greater sage-grouse currently occupy; 3) reconnect stronghold/source habitats currently occupied by greater sage-grouse with isolated habitats currently occupied by greater sage-grouse; 4) reconnect currently occupied and isolated habitats; 5) restore potential sagebrush habitats that currently are not occupied by greater sage-grouse. Develop allowable use restrictions in greater sage-grouse habitats undergoing restoration, on a case-by-case basis, as dictated by monitoring.

Forest/Woodland Products

Parameter — Biomass Products

FP-22: Allow biomass harvest in areas where vegetation projects require vegetation removal and meet project objectives.

Fire

Management Actions–Fire

FM-4: Incorporate and utilize Fire Regime Condition Class as a major component in fire and fuels management activities. Use Fire Regime Condition Class ratings in conjunction with vegetation objectives (see the discussion on Vegetation Resources) 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.

FM-5: In addition to fire, implement mechanical, biological, and chemical treatments along with other tools and techniques to achieve vegetation, fuels, and other resource objectives.

Noxious and Invasive Weeds

Management Actions – Noxious and Invasive Weeds

WEED-1: Continue to use integrated weed management to treat weed infestations and use principles of integrated pest management to meet management objectives and to reestablish resistant and resilient native vegetation communities.

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

- The Ely Proposed Resource Management Plan/Final Environmental Impact Statement (November 2007).
- The Final Programmatic Environmental Impact Statement (PEIS) – Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States (2007).
- Ely District Integrated Weed Management Plan & Environmental Assessment (2010)

1.5. Relationship to Statutes, Regulations, or other Plans

The proposal is also consistent with other Federal, State and local plans or decisions including, but not limited to, the following:

The White Pine County Public Land Policy Plan (August 2007) which identifies the following policies:

Policy 2-2: Protect and preserve the quality of the environment, and economic, cultural, ecological, scenic, historical and archeological values; protect and preserve wildlife habitat values compatible with economic opportunities needed to provide for long term benefits for the people of White Pine County now, and future generations.

Policy 2-4: Support the Great Basin Restoration Initiative.

Policy 5-3: Support the management of woodlands/forest by ecological condition for a diversity of vegetation communities. Grass and shrub ecosystems with no or few invasive species are preferable to pinyon/juniper monocultures.

Policy 5-5: Recognize the importance of maintaining healthy aspen communities and encourages activities that will retain and improve the vigor of these communities.

Policy 9-7: Support habitat restoration to improve wildlife habitat when compatible with other uses.

The Lincoln County Public Land Policy Plan (August 2007) which identifies the following policies:

Policy 2-1: Support the concept of Multiple Use Management as an overriding philosophy for management of the public lands based on multiple use and sustainable yield concepts, and in a way that will conserve and enhance our natural resources.

Policy 2-4: Support the Great Basin Restoration Initiative.

Policy 5-1: Promote multiple uses of public forest resources to realize sustainable and continuous provisions of timber, forage, firewood, wildlife, fisheries, recreation and water.

Policy 5-3: Lincoln County should pursue the implementation and siting of a biomass energy production center in Lincoln County. The County should utilize university range scientists and Agricultural Research Service to monitor the renewable and sustainable health of our forests. These efforts would improve the forest health, establish beneficial plants, rejuvenate springs, improve habitat for sage grouse, help control erosion, and establish a systematic treatment of the PJ overstory. Lesser densities of trees reduce competition for available water and other resources. The treated pinyon and juniper tree product could be used to make electric energy, pellets, particle board, and certain beneficial chemicals used in manufacturing.

Policy 5-4: Support the management of woodlands/forest by ecological condition for a diversity of vegetation communities. Grass and shrub ecosystems with no or few invasive species are preferable to pinyon/juniper monocultures with little to no shrub or herbaceous understory. Promote sustainable management and protection of aspen, ponderosa pine, white fir and limber pine forests. Recognize that although these upper elevation forest communities are only a small portion of Lincoln County's extensive forest lands, they are a very important forest type.

Policy 5-5: Urge Federal agencies to promote and facilitate treatment of wildland/urban interface and the treatment of the monocultures such as pinion and juniper forests, and the removal of tamarisk on public lands. Emphasis in regard to these areas should be the reclamation of beneficial plant communities which also enhances the watershed, wildlife, fire management, and grazing. This should be done in such a manner that local entities have an opportunity to derive economic benefits from the forest. Local officials and entities should be consulted for their input prior to any such treatments in cooperation with Federal agencies.

Policy 5-6: Recognize the importance of maintaining healthy aspen communities and encourage demonstrated restoration activities that will retain and improve the vigor of these plant communities.

Policy 9-8: Habitat reclamation and "revegetation" projects to improve wildlife habitat should be supported and encouraged when compatible with other uses. Coordination should be made with BLM resource specialists, N-4 State Grazing Board, Lincoln County Commission, and NDOW planners regarding habitat reclamation, improvement, and management. Such improvement projects should be done in advance of any transplant of game animals. Scientific monitoring of the vegetation improvement projects should be established and resource values established prior to any such transplants to assure the success of the transplant operations. Lincoln County encourages the "revegetation" work to be accomplished in a timely and efficient fashion.

Policy 9-9: Support prescribed burns in appropriate areas. Fire rehabilitation and appropriate re-vegetation of beneficial species, both native and non-native in relation to natural fire cycles, contribute to habitat improvement and rejuvenation.

The Lincoln County Elk Management Plan (2006 Revision) was developed by a Technical Review Team (TRT) that consisted of representatives from the Bureau of Land Management (BLM), the Natural Resources Conservation Service (NRCS), Nevada Department of Wildlife (NDOW), sportsmen, ranchers, general public, and conservationists. The plan identified vegetation conversion projects will focus on the eastern portion of Lincoln County within NDOW Management Units 22, 23, and 24 where there is high and moderate potential elk habitat. The project area lies within NDOW Management Units 22. Action Item 1 under Habitat Enhancement outlined in the plan indicates: Enhance habitat to create more diverse plant communities to meet multiple use objectives.

The White Pine County Elk Management Plan (2007 Revision), which was developed by a Technical Review Team (TRT) that consisted of representatives from the United States Forest Service (USFS), the Bureau of Land Management (BLM), the National Park Service (NPS), the Natural Resources Conservation Service (NRCS), Nevada Division of Wildlife (NDOW), sportsmen, ranchers, general public, conservationists and the Goshute Indian Tribe. The plan identified vegetation conversion projects by NDOW management units that would improve wildlife habitat by creating a more diverse mixture of grasses, forbs and shrubs. The project area lies within NDOW Management Unit 111. Elk numbers have been achieved in this unit. Possible projects/opportunities listed in the plan for this area include "large potential for prescribed fire or thinning in pinyon-juniper communities." The health of aspen stands within the unit was cited as a potential limitation to management.

White Pine County Portion (Lincoln/White Pine Planning Area) Sage Grouse Conservation Plan (2004) (page 21) – "Goal 3: Manage for diverse, healthy, sagebrush plant communities in each PMU"

State Protocol Agreement between the Bureau of Land Management, Nevada and the Nevada Historic Preservation Office for Implementing the National Historic Preservation Act (2009)

Ely District Integrated Weed Management Plan - Plan Objective 4.2 Prevention: "…ensure that everything possible is done up front to prevent new weed infestations from establishing or new weed species from entering the Ely District."

Standards and Guidelines for Nevada's Mojave-Southern Great Basin Area (MS) and Northeastern Great Basin Area (NE), which were used to evaluate rangeland health based on the following guidelines:

- MS 1.3 When proper grazing practices alone are not likely to restore areas, land management practices may be designed and implemented where appropriate.
- MS 2.7 When proper grazing practices alone are not likely to restore areas of low infiltration or permeability, land management practices may be designed and implemented where appropriate. Grazing on designated ephemeral rangeland watersheds should be allowed only if (i) reliable estimates of production have been made, (ii) an identified level of annual growth or residue to remain on site at the end of the grazing season has been established, and (iii) adverse effects on perennial species and ecosystem processes are avoided.
- MS 3.7 Where grazing practices alone are not likely to achieve habitat objectives, land management practices may be designed and implemented as appropriate.
- NE 3.4 Where livestock grazing management and wild horse and burro herd management alone are not likely to achieve habitat objectives, land treatments may be designed and implemented as appropriate.

1.6. Scoping, Public Involvement and Issues:

The Cave Valley and Lake Valley Watershed Restoration Project was scoped internally by the Bureau of Land Management (BLM) Schell Field Office interdisciplinary team. A letter to individuals and entities that had previously expressed interest in the watershed analysis process was mailed on April 1, 2011 requesting input regarding potential alternatives to affect change within the watershed to enhance the condition of the resources. Only two responses were received. Following further team discussion, the proposal was amended to potentially include a travel management plan and a second public scoping period was held. Two public meetings were conducted, one at the BLM Ely District Office on June 16, 2011 and one at the BLM Caliente Field Office on June 21, 2011. Additionally, a site visit was conducted on August 24, 2011 for any interested parties who had previously submitted comments during the scoping period. The following issues are analyzed within this EA as a result of internal scoping and from comments received during external scoping:

- Impacts to intact sagebrush communities and resulting impacts to the wildlife that depend on sagebrush habitat
- Availability and production of pine nuts and other vegetative products
- Spread of non-native invasive and noxious weed species
- Impacts to wildlife and other vegetative species resulting from the removal of pinyon pine and juniper tree cover
- Impacts from livestock grazing on vegetation and other resources
- Potential impacts from climate change

A number of the public comments concerned the proposed treatments units in wilderness. Due to these comments, the proposed treatments in wilderness were re-evaluated. As a result, four of the seven treatment units in wilderness were dropped from the proposed action. Treatments were evaluated in the context of preserving wilderness character, FRCC departure and fire history, among other factors. These units will allow natural processes to manipulate the environment (i.e. natural fire starts), rather than human manipulation of the resource (trammels). The three

remaining treatment units are in Mt. Grafton Wilderness, and were brought forth into this final document. With these changes to the document, the purpose and need described above continue to be met.

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Chapter 2. Proposed Action and Alternatives

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2.1. Introduction

The previous chapter presented the Purpose and Need of the proposed project, as well as the relevant issues, i.e., those elements that could potentially have a significant impact on the quality of the human environment through the implementation of the proposed project. In order to meet the purpose and need of the proposed project in a way that resolves the issues, the BLM has developed alternatives that are presented below.

2.2. Adaptive Management

Adaptive management, as defined by the Natural Resource Council 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 both 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. It is not a 'trial and error' process, but rather emphasizes learning while doing. 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 longer time scale 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 Cave Valley and Lake Valley Watershed Restoration Project. Adaptive management would be used within the bounds of this analysis to achieve the objectives specified for treatments conducted.

2.3. Aspects Common to Alternatives A and B

2.3.1. Treatment Restrictions Common to All Treatments

Several treatment methods are proposed for use within the Cave Valley and Lake Valley Watersheds. These treatment methods have been utilized within other areas of this watershed as well as other areas of the Ely District. The results of these treatments have been monitored and a range of potential outcomes is understood. Each method listed below includes a description of the treatment and the parameters by which it would be selected if multiple methods are allowed within the same area. Primary treatments refer to treatments that would occur over large sections of the treatment area and would represent the initial treatment within each treatment unit. Following the primary treatment there may be secondary treatments implemented to achieve the objectives for the treatment unit. Secondary treatments refer to smaller more targeted treatments conducted after the primary treatment to achieve the objectives for the treatment unit. Secondary treatments would be conducted after post monitoring indicates the results of the primary treatment. Selection of the primary treatment would be based on the desired outcome, environmental conditions, as well as physical and social constraints within the area. Secondary treatments may be applied if the original objectives were not fully achieved through application of the primary treatment.

2.3.1.1. Timing Restrictions

1. Sage grouse – Do not allow treatments within four miles of active leks from March 1 – July 15 during breeding, nesting, and early brood rearing seasons.
2. Migratory birds – Avoid treatments during the migratory bird nesting season from May 1 – July 15. If a treatment is to be implemented during the nesting season, a BLM Wildlife Biologist would determine the appropriate survey methods (timing, frequency, etc.) and restrictions needed prior to implementation to minimize impacts to migratory birds.
3. Raptors – Avoid conducting treatments from April 15 – July 15 within a half-mile of active raptor nests, unless the nest has been determined to be inactive for at least 5 years.
4. Big Game – Avoid conducting treatments within big game calving/fawning/kidding grounds and crucial summer range from April 15 – June 30.

2.3.1.2. Treatment Design Restrictions

1. Sagebrush treatments should be conducted in a mosaic pattern and seeded if there is no existing herbaceous understory.
2. Minimize sagebrush treatments in areas that consist of pygmy rabbit or winter sage grouse habitat.
3. No vegetation treatments should occur within a quarter mile of an active sage grouse lek (with the exception of pinyon and juniper removal) unless reviewed and approved by a BLM Wildlife Biologist.
4. In each watershed, do not treat more than 20% of sage grouse breeding habitat within a 30-year period, which is the approximate time for a sagebrush stand to recover. Additional treatments should be deferred until the treated area provides suitable habitat (15%-25% sagebrush cover and greater than 10% herbaceous cover) (Connelly et al. 2000).
5. Do not reduce sagebrush canopy cover to less than 15% unless a fuels management objective requires additional reduction in sagebrush cover to meet strategic protection of priority sage grouse habitat and conserve habitat quality for the species.
6. Allow no treatments in known sage grouse winter range unless the treatments are designed to strategically reduce wildfire risk around or in the winter range and will maintain winter range habitat quality.
7. Do not use fire to treat sagebrush in less than 12-inch precipitation zones (Wyoming big sagebrush or other xeric sagebrush species)
8. Pinyon pine and juniper stringers would be incorporated for Ferruginous hawk nests on the benches where pinyon pine and juniper has encroached into sagebrush communities.
9. Avoid removal of pinyon pine and juniper displaying old-growth characteristics. Old-growth characteristics generally include trees displaying a combination of the following: broad asymmetric tops, deeply furrowed bark, twisted trunks or branches, dead branches and spike tops, large lower limbs, hollow trunks (mostly in juniper), large trunk diameter relative to tree height, and branches covered with lichen.

2.3.1.3. Visual Resource Restrictions

The treatment units occur within all four Visual Resource Management (VRM) classes. To meet the appropriate objectives for VRM, the following design criteria would be followed when designing vegetation treatment.

Mechanical treatments would include runners of trees along the drainages and islands of trees to maintain diversity for wildlife and to achieve a natural appearance. Figure 2.1, "Image depicting the "natural" interface from woodland sites above to rangeland sites below with stringers of trees along washes and in depressions" (p. 19) represents a "natural" appearance of the interface between woodland sites above and rangeland sites below with runners of trees along the drainages. Prior to project implementation, stringers and islands would be mapped to produce a mosaic pattern. Trees would generally remain in an arrangement similar to that depicted in the figure below. Biomass remaining on site could be scattered on the ground or piled and burned following treatment.

Figure 2.1. Image depicting the "natural" interface from woodland sites above to rangeland sites below with stringers of trees along washes and in depressions

2.3.1.4. Cultural Restrictions

All treatment units with planned treatments that create surface disturbance would be inventoried for cultural resources to identify eligible (Historic Properties) and potentially sensitive sites prior to implementing treatments. Prior to treatment, any possible Traditional Cultural Properties would be identified. An archaeologist would review any potential properties found to determine appropriate mitigation.

A Cultural Needs Assessment would be completed for each treatment unit prior to implementation of any treatment. Identified cultural sites would be recorded and evaluated to determine eligibility for the National Register of Historic Places (NRHP). Eligible cultural resources would be avoided or impacts mitigated as necessary before any surface disturbing treatments are initiated. Historic mining districts and mines would also be identified for the safety of crews working in the area. A standard 20-meter buffer would be in place for any treatments utilizing heavy equipment or for removal of flammable material surrounding cultural sites that may be affected by fire or heat

preceding ignition of a prescribed fire. A hand-cut fireline may also be created surrounding the 20-meter buffer for prescribed fire. Burn piles would be located in previously disturbed areas or, if not available, an archaeologist would survey the area to identify any avoidance areas for the placement of the piles. Prior to aspen treatments, a survey would be conducted for arborglyphs and an archaeologist would review to determine appropriate mitigation. These procedures regarding National Historic Preservation Act Compliance are outlined in Appendix D, *Programmatic Agreement for Compliance with the National Historic Preservation Act* (p. 223)

A Class III cultural resource inventory would be required when applicable, including the use of vehicles or heavy equipment or when all-terrain vehicles (ATVs) are used for more than a one-time application of chemical treatments. A mosaic pattern would be designed for any mechanical treatments to avoid any cultural sites identified during the Class III inventory. Avoidance areas that would not be treated would be irregularly shaped and blended with the landscape. No Class III cultural resource inventory would be required for hand cutting treatments if the trees were cut, dropped, and hand-carried off of the site. The appropriate level of cultural resource inventory will be determined for mowing projects prior to implementation based on specific aspects of the treatment design and location. A Class I cultural resource inventory would be required when ATVs are used for a one-time application of chemical treatments and travel routes would avoid all known cultural sites. A Class I cultural resource inventory would also be required prior to ignition of prescribed fire and within 24 hours of a naturally ignited fire to determine if any burnable or fire-sensitive resources are present.

2.3.1.5. Mineral Restrictions

All authorized borrow pits, applications to drill, and mining notices and plans would be avoided.

A survey for mining claim markers in documented active claim sites would be conducted prior to implementing treatments. 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.

2.3.1.6. Travel Restrictions

No new roads would be constructed or created during project implementation. Off-road travel with heavy equipment and vehicles would occur during implementation. Loading and unloading any equipment would occur on existing roads to minimize off-road disturbances 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. No off-road travel would be authorized for harvest of fuelwood by the public.

2.3.1.7. Grazing Restrictions

Coordination with the affected livestock permittees within the allotments being treated would be conducted prior to any treatment occurring. Any livestock grazing closure for the purpose of a vegetation treatment would be done through the grazing decision or agreement process and would occur prior to the treatment. Livestock grazing would not be authorized within the treatment areas during implementation of each treatment. Livestock grazing would resume immediately within treatment areas that exhibit at least 10 percent foliar cover of desirable perennial grasses and forbs. Seeded areas would be closed to livestock grazing, which may be facilitated through the use of temporary fencing, for two years or until the following vegetation objectives have been met:

- A minimum of five or more desirable perennial plants per square meter would be firmly rooted in the treated area. Desirable perennial plants are those plants that are native or introduced and have the ability to maintain ecosystem processes and provide forage for livestock and wildlife.

- In aspen (*Populus tremuloides*) stands, regeneration of 350 aspen shrub phase stems per acre and 175 saplings per acre greater than 1.5 inches diameter at breast height (DBH).

Monitoring sites would be established prior to project implementation however, additional sites may be established within one year following treatment completion. Monitoring locations would be measured annually during the livestock grazing closure period. The closure period may be extended until vegetation objectives have been met. At that time livestock grazing would resume as permitted.

An interdisciplinary team would conduct a review of the resource monitoring data and objectives to determine if and 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 determine an appropriate grazing regime with the permittee.

2.3.1.8. Hydrology Restrictions

Crossing perennial, intermittent, ephemeral drainage features would be avoided unless deemed absolutely necessary. If it is deemed necessary to cross these features, crossing locations would be approved by the authorized officer with input from the appropriate technical specialist. If the crossing or entering of ephemeral features must be undertaken, ingress and egress would be as close to 90 degrees to draw long-axis as possible and with as little bank disturbance as practicable. 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.

2.3.1.9. Cadastral Restrictions

In accordance with IM-NV-2007-003, surveys would be conducted for cadastral monument and markers prior to any surface disturbing activities and, if they are disturbed, they would be restored after treatment.

2.3.1.10. Private Land Restrictions

There are private lands located within the boundaries of proposed treatment units. These private lands would not be treated unless a cooperative agreement is in place between the BLM and the landholder.

2.3.1.11. Air Quality Restrictions

A smoke permit would be required for implementation of prescribed fire and wildfire for resource benefit treatments in accordance with the following documents:

- BLM Handbook H-9214-1 Prescribed Fire Management Handbook
- Interagency Prescribed Fire Planning and Implementation Procedures Guide, 2003, Modified
- NWCG Interagency Incident Business Management Handbook, PMS 902, NFES 3139.
- Wildland Fire Use Implementation Procedures and Reference Guide, 2005, Modified
- Interagency Strategy for the Implementation of Federal Wildland Fire Management Policy, 2003

2.3.1.12. Non-native Invasive and Noxious Species Restrictions

Prior to implementation of each specific project, a site-specific weed survey would occur and a weed risk assessment would be completed. If the presence and/or spread of noxious weeds is noted, appropriate weed control procedures would be determined in consultation with Ely District Office personnel and would be in compliance with the appropriate BLM Handbook sections and applicable laws and regulations. All weed control efforts on BLM-administered lands would be in compliance with BLM Manual 9011 Chemical Pest Control and BLM Handbooks H-9011-1 Chemical Pest Control, H-9014 Use of Biological Control Agents of Pests on Public Lands, and H-9015 Integrated Pest Management. Submission of Pesticide Use Proposals and Pesticide Application Records would be required. Stipulations identified in the weed risk assessments and the Ely District Integrated Weed Management Plan and Environmental Assessment (DOI-BLM-NV-L000-2009-0010-EA) would be carried out at the time of implementation within each treatment unit and for each site specific project.

Management of weeds would include best management practices 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 (USDA) - 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 (*Bromus tectorum*) that are hindering successful recovery of desired plant species. Sheep, cattle, or goats may be used as long as the animals are intensely managed and removed when the utilization of desirable species reaches 35%. Timing restrictions would apply when using targeted grazing to reduce impacts to desired plant species. Targeted grazing would only be allowed during early spring green up when cheatgrass has emerged and other desired grasses are mostly dormant, or in the fall after desired grasses and forbs become dormant.

Treatments may include hand pulling, mowing, cutting using hand or chainsaw, and prescribed fire. Chemical treatments could 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 Report submitted to the BLM Nevada State Office following implementation. Herbicide treatments for weeds would include the potential use of all BLM approved herbicides and surfactants, both in the BLM Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement (EIS) and Record of Decision (BLM 2007), and any herbicides approved in the future using the protocol for identifying, evaluating, and using new herbicides as described in that EIS. 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.

2.3.1.13. Right-of-way Restrictions

All utility lines and other rights-of-way (ROW) structures would be avoided during implementation, depending on the selected treatment type. Above ground structures associated with buried utility lines would also be avoided. Any potential ROW holders within the treatment units would be notified prior to implementation.

2.3.1.14. Wilderness Restrictions

Treatments conducted within Wilderness Areas would be designed to be in full compliance with BLM Wilderness Policy (BLM Manual 8560) and applicable Wilderness Management Plans. Treatment methods and design would be reviewed by the Ely District Wilderness Planner to ensure the least amount of potential impact. A Minimum Requirement Decision Guide (MRDG) analysis was completed for this project (see Appendix F, *Minimum Requirements Decision Guide* (p.)). Additional specific design features would be incorporated as the treatment design is finalized prior to implementation. Should any adaptive management techniques be required in the future in wilderness additional site-specific NEPA analysis and an MRDG would be required.

Additionally, for areas identified for implementation of prescribed fire treatments, planned ignitions would be conducted in a series over several years to accomplish the objectives for any one prescribed fire treatment unit. No prescribed fire treatment units would be completely burned within a single year. If, prior to implementation, natural fire starts or fire for resource benefit should achieve the objectives for any one treatment unit, the proposal would not be implemented.

2.3.2. Vegetation Treatment Methods

2.3.2.1. Methods for tree removal or woodland restoration

Tree removal would be targeted in areas where tree establishment and density is at undesired levels and should be thinned or removed in order to achieve management goals listed in the Ely RMP. Examples include single-leaf pinyon pine and Utah juniper species establishment in sagebrush communities or establishment of mixed conifer species in aspen communities. Riparian areas with tree encroachment would also be a priority.

2.3.2.1.1. Group tree removal — Chaining

Chaining would be accomplished using the Ely Anchor Chain (Navy ship anchor chain with 40-120 pound links and 18 inch railroad iron welded perpendicular to the chain link) and/or

smooth chain (chain with 40-120 pound links) pulled between two bulldozers. Chaining treatments would consist of one or two-way chaining (chaining the trees twice, once from one direction, then from a different direction). Islands of untreated trees would be left to provide escape and thermal cover for wildlife. Areas that are chained would be seeded prior to completing the final pass. Biomass may be left on site for natural degradation, treated with a secondary treatment (i.e. prescribed fire) or may be made available for removal and use after the implementation of the treatment.

Chaining would be used where decadent sagebrush and heavy to moderate encroachment of pinyon pine and juniper are reducing the proportion of younger brush, grasses, and forbs within an area. Chaining is a desirable method for incorporating seed into a diverse seedbed to promote revegetation of the area. In addition to seed applied through an aerial method, seed dribblers attached to the track of the bulldozer can be used to press antelope bitterbrush (*Purshia tridentata*) seed into the soil to promote establishment.

Chaining would not be desirable in areas where selective tree removal is needed to meet objectives and treatments should be designed to avoid stands of mountain mahogany. For the purpose of removing pinyon pine and juniper trees and maintaining sagebrush communities, chaining would not be a desirable method in areas with less than 10% tree cover. Chaining would be preferred on slopes of less than 20%, however may be considered on slopes up to 30%.

2.3.2.1.2. Individual tree removal — Mastication or other mechanical methods

Mastication and mechanical removal of pinyon pine and juniper includes the use of some form of cutting head attached to a piece of machinery from the size of a light duty skid steer or larger. The cutting heads can be of various designs, some of which chip the tree, cut and pile the tree, and others that cut, lop, and scatter the tree. The potential for biomass removal would depend on the type of method used. Biomass, including fuelwood, would be made available for public use to the greatest extent possible. Biomass created from whole-tree cutting methods would be consolidated into piles and disposed of later through prescribed burning, spread out using a lop and scatter technique, or hauled offsite. Biomass created from mastication equipment would be left onsite to degrade by natural means. Scatter height of cut limbs and trees for areas treated with lop and scatter methods would be a maximum of 24 inches. Following treatment, the site would be inspected to determine if excess biomass left onsite in certain locations would restrict movement for sage grouse and other wildlife. If this occurs the biomass within these areas may be piled and/or burned or removed mechanically. Burning of piles would take place when there is a low chance for fire spread and when soil moisture levels are sufficiently high to prevent hydrophobicity, generally October through April. A burn plan would be written and approved prior to any prescribed burning.

Mastication or mechanical tree removal is a desirable method for selective removal of pinyon pine and juniper (thinning areas or areas with desirable tree species intermixed) with minimal impact to existing brush, grasses and forbs. However, mastication loses efficiency as tree density and size increases. This method can incorporate some seed and prepare a seed bed in areas, but only where the equipment travels. Mastication or mechanical tree removal may be effective in areas where tree densities fall below the cover threshold for chaining. Chipping equipment is preferable in areas where remaining biomass is to be minimized (chips versus whole trees). Whole-tree cutting methods can be utilized for biomass removal and utilization.

When using this method, chip layers resulting from mastication should be restricted to six inches or less. Mastication or mechanical tree removal would be preferred on slopes of less than 20%, however may be considered on slopes up to 30%. If biomass is to be removed from the project site, accommodations would need to be made for vehicles to be able to access the site for loading and vegetation removal prior to authorization.

2.3.2.1.3. Hand Cutting

Hand cutting would involve the use of crews to selectively hand cut the trees within the treatment area. Trees would be lopped and scattered across the treatment area or piled. Cut tree material in sage-grouse habitat would be scattered or piled next to the tree bole to allow movement of sage-grouse through or around the area. The piles could also be burned for more complete removal of biomass. Remaining biomass may be left on site, removed for utilization, or burned. Scatter height of cut material for areas treated with hand cutting would be a maximum of 24 inches. Following treatment, the site would be inspected to determine if excess biomass left onsite in certain locations would restrict movement for sage grouse and other wildlife. If this occurs the biomass within these areas may be piled and/or burned or removed mechanically. Hand cutting may be used as a pretreatment or as a component of any of the other treatment methods.

In wilderness areas, hand cutting may include use of hand saws or chain saws, depending on the results of the Minimum Requirement Decision Guide (MRDG). Biomass removal would be done only through non-mechanical means if necessary.

Hand cutting is a desirable method for the selective removal of pinyon pine, juniper, or other tree species (thinning areas, areas with desirable tree species intermixed, or buffering sensitive resources) with minimal impact to existing brush, grasses and forbs. It may also be an effective method in areas where tree densities fall below the cover threshold for chaining or where slope restricts the use of chaining, mastication, and other mechanical methods. Hand cutting would not be used to incorporate seed or prepare a seed bed.

2.3.2.2. Mechanical Methods for Sagebrush Restoration

Mechanical sagebrush treatments would target late seral sagebrush sites (Wyoming, Black, and Mountain sagebrush) where older and decadent sagebrush is increasing and the herbaceous understory is diminishing.

2.3.2.2.1. Dixie Harrow

The Dixie harrow consists of a large spike-tooth harrow pulled by a four-wheel drive rubber-tired tractor equipped with a three-point hitch. 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 can all be controlled. Sagebrush mortality levels can be adjusted through the removal or addition of tines. Within these units, mechanical removal of pinyon pine and juniper may be utilized to remove the trees prior to treatment, as opposed to avoiding them. 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 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 have to negotiate around trees if they are not removed prior to treatment and treatment areas would be generally restricted to areas that are less than 20% slope, however may be considered on slopes up to 30%.

The Dixie harrow may be used as a secondary treatment within areas that have been treated for removal of pinyon pine and juniper to further reduce the shrub component in order to achieve the desired mosaic pattern and percentages of seral states listed within the objectives for each treatment area. When used as a secondary treatment, the amount of biomass remaining on site would restrict the effectiveness of the Dixie harrow.

2.3.2.2.2. 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. Any biomass resulting from this treatment would be left on site for natural decomposition.

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, but would need to negotiate around large pinyon pine and juniper if not cut prior to treatment. Equipment would be generally restricted to areas that are less than 20% slope, however may be considered on slopes up to 30%, and soils that contain a low amount of rock fragments.

The roller chopper may be used as a secondary treatment within areas that have been treated for pinyon pine and juniper removal in order to further reduce the shrub component to achieve the desired mosaic pattern and percentages of seral states listed within the objectives. When used as a secondary treatment the amount of biomass remaining on site may (depending upon diameter) restrict the effectiveness of the roller chopper.

2.3.2.2.3. 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 effective at incorporating seed into the soil or preparing the seedbed and would have to negotiate around pinyon pine and juniper if they are not removed prior to treatment. Mowing treatments would be generally restricted to areas that are less than 20% slope, however may be considered on slopes up to 30%, and a relatively low amount of surface rock.

Mowing may be used as a secondary treatment within areas that have been treated for removal of pinyon pine and juniper to further reduce the shrub component in order to achieve the desired mosaic pattern and percentages of seral stages listed within the objectives for each treatment unit. When used as a secondary treatment the amount of biomass remaining on site would restrict the effectiveness of the mowing treatment.

2.3.2.2.4. Chemical Treatments

All chemical treatments would be in accordance with the specifications listed on the label for the chemical being used and the Standard Operating Procedures and Project Design Features for Herbicide Applications as identified in the Final Programmatic Environmental Impact Statement (PEIS) – Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States (2007) and associated Record of Decision. Agency and contractor personnel involved with the application of pesticide would be appropriately licensed as required by the EPA, BLM, and the State of Nevada. Equipment utilized for application would be properly equipped and calibrated for dispensing the herbicide. For aerial applications of herbicide the pilot would be required to have a current Nevada pesticide applicator's license and the aircraft would need to be equipped to precisely dispense the herbicide. A Pesticide Use Proposal (PUP) would be completed and authorized prior to completing the treatment. Standards and guidelines for storage facilities, posting and handling, accountability and transportation as listed in BLM Handbook 9011 (Pesticide Storage, Transportation, Spills and Disposal) Section II would be followed. Items listed in the Material Safety Data Sheets (MSDS) provided for all chemicals used would also be adhered to.

2.3.2.2.4.1. Tebuthiuron

Tebuthiuron is a pesticide used to control woody species and may be applied in accordance with all applicable federal, state and local laws, regulations and guidance. The preferred time of application would be during the fall prior to the first snow fall, however, the herbicide could be applied any time as long as the ground is not frozen, water saturated, or snow covered. The project would be conducted during calm weather conditions to avoid herbicide (pellet) drift. A buffer zone of no application would also be incorporated around the project boundary to ensure that the Tebuthiuron only falls within the project area.

Herbicide effectiveness of Tebuthiuron depends on the soil depth and texture and the amount of clay and organic matter content of the soil. Soil samples would be collected and tested at various locations in major vegetation types within the treatment area to determine soil properties and appropriate herbicide application rates in order to meet the objectives of the project.

Tebuthiuron is proposed to achieve one of three objectives: 1) to reduce pinyon pine and sagebrush cover within mountain sage communities to release deep rooted shrubs, grasses and forbs, 2) to reduce sagebrush cover in a spotty and mosaic fashion and at application rates that result in less than 100% mortality within black and Wyoming sagebrush sites, and 3) to reduce sagebrush competition with grasses and forbs within areas where a desirable understory is already present. Application rates would be determined through soil analysis and the objectives for the specified treatment unit.

Biomass remaining after the effects of the herbicide are realized may be left on site for natural decomposition, treated with prescribed fire, or made available for fuelwood. If made available for fuelwood, the Material Safety Data Sheet and any other applicable information must be

reviewed to ensure the safety of combustion of wood that has absorbed the chemical and must be made available to the public.

Tebuthiuron may be used in areas where shrub and tree cover would need to be removed in order to release grasses, forbs and deep rooted woody species (rate dependent). Tebuthiuron may be used in areas where terrain limits other mechanical treatments. However, Tebuthiuron should not be used in areas that have soils with clay content greater than 30% or that have surface water or an elevated groundwater level. Treatments should be designed to avoid stands of mountain mahogany. Tebuthiuron may be used as a secondary treatment to further reduce the shrub component to achieve the desired mosaic pattern and percentages of seral states listed within the objectives for each treatment unit.

2.3.2.2.4.1.1. Tebuthiuron for Suppression of Pinyon Pine and Juniper

Target areas for herbicide treatment would be areas where pinyon pine and juniper have established on sagebrush ecological sites and late seral pinyon pine and juniper woodland sites where a desirable understory is established. Following application of the herbicide in doses sufficient to control juniper, it would be expected to have near 100% mortality of sagebrush and pinyon pine. This treatment should be restricted to areas that have a desirable understory of grasses established that are resilient to the herbicide.

2.3.2.2.4.1.2. Tebuthiuron for Suppression of Sagebrush

Target areas for herbicide treatment would be areas where older, decadent, even-aged stands of sagebrush exist with a desirable understory. Application of herbicide in this instance would be done at rates that would result in partial control of sagebrush. Following application of the herbicide in such doses, it would be expected that deep rooted shrubs (antelope bitterbrush) and trees (juniper) would not be substantially impacted and existing grasses and forbs would be released.

2.3.2.3. Prescribed Fire

Prescribed fire can be used to control certain species, manage fuel loading, maintain vegetation community types that are fire dependent, and enhance growth, reproduction, or vigor of certain species. Target locations would be chosen in sites with existing native perennial understory species. These target areas would exhibit characteristics where positive natural re-establishment of native grasses and favorable establishment of seeded grasses are most likely to occur. Given the presence of a healthy and diverse understory of native perennial species and a lack of non-native invasive plant species, it is less likely that invasive plants would establish in these areas.

Vegetation targeted for prescribed fire includes aspen, mixed conifer (other than those types listed under incidental or avoidance), mountain mahogany, mountain sagebrush, and pinyon pine and juniper woodlands. Incidental vegetation types would include sagebrush (Wyoming, black, and low), ponderosa pine and vegetation within riparian areas. Vegetation types that would be avoided with prescribed fire are limber pine, bristlecone pine, and salt desert scrub communities. Prescribed fire may be used as a secondary treatment to achieve the objectives listed for individual treatment areas. Prescribed fire may also be used to reduce biomass left on site. In the event that prescribed fire is utilized in areas where antelope bitterbrush is present, fire severity and timing of ignition would be limited to minimize impacts to the antelope bitterbrush.

Ignitions would occur within the specific prescribed burn project boundary designated within the treatment units. Prescribed fire that moves outside of the prescribed burn project boundary but remains within the treatment unit boundary may be managed to accomplish resource management objectives consistent with those listed for the treatment unit. Prescribed fire that moves outside of the treatment unit boundaries would be fully suppressed.

Ignition would be strategically timed to best reduce fuel hazards to acceptable levels and benefit ecological system health. Fuel moistures and atmospheric conditions would be closely monitored prior to ignitions to achieve the specific levels of fire severity targeted within the objectives and burn plan, maintain the greatest degree of control possible, and prevent adverse impacts from smoke.

A combination of ground and aerial firing (ignition) resources would be used to implement the prescribed burn. Ground firing resources would include drip torches and terra torch where applicable. Clean up and control would also be conducted with the use of drip torches and/or terra torch. Aerial application would be through the use of a Plastic Sphere Dispenser (PSD) machine or helitorch. Aerial fire application would improve efficiency and effectiveness. Safety, fuels properties, current and expected weather, topography (ingress/egress), and holding capabilities would determine the proper fire application. Drainage bottoms would be avoided, where possible, and mosaic patterns would be preferred to block patterns. An approved burn plan would be prepared prior to any prescribed fire. Control lines for prescribed fire would utilize natural barriers as much possible. In the event natural barriers cannot be utilized, trees and shrubs would be cut and removed along prescribed fire boundaries. Vegetation removal may include techniques described under Section 2.3.2.1, "Methods for tree removal or woodland restoration" (p. 23). Vegetation removed along the control line would be piled inside the prescribed fire boundary and burned during firing operations. In some cases control lines would include scraping and/or digging to expose mineral soil. If fire lines are constructed for a prescribed burn, the lines would be rehabilitated after the completion of the burn. Rehabilitation of the lines may include seeding (by hand or ATV), dragging brush back onto the line, and/or water-barring the fire line.

Prescribed fire may be used in areas where reducing the shrub and/or tree component is desirable to release other desirable vegetation (aspen, grasses, forbs, etc.) and in areas that have a pre-existing understory to reseed the burned area naturally. It may also be used in areas with varying terrain and is the preferred method for aspen and mountain mahogany regeneration. However, boundaries should be designed to avoid sage grouse breeding habitat and any known cultural sites that are susceptible to damage from heat or smoke. Prescribed fire may be used as a secondary treatment to further reduce the shrub component to achieve the desired mosaic pattern and percentages of seral states listed within the objectives for each treatment area.

Planned ignition is a technique that may be employed within the prescribed burn units and may be preferred in prescribed burn units within the wilderness areas (if allowed within the applicable Wilderness Plan). This technique involves igniting a fire in a strategic location, time, and weather conditions to accomplish the specified objectives. Following ignition the fire is allowed to burn as the weather and fuels dictate with suppression forces utilized to keep it within the prescribed burn area boundaries or to protect sensitive resources. This technique will require a series of planned ignitions over several years to accomplish the objectives for any one prescribed fire treatment unit.

2.3.2.4. Aspen Restoration

Aspen communities within the Cave Valley and Lake Valley Watersheds not identified elsewhere in the alternatives for potential treatment may be targeted for specific aspen restoration activities. Aspen within the Egan Range is subject to treatment consistent with the treatments outlined in this document and in the Egan Range Aspen Restoration EA and Decision Record (DOI-BLM-NV-L020-2010-0008-EA), which includes manual conifer removal, fencing, and prescribed fire (broadcast and piles). Aspen stands outside the treatment units, or within treatment units but not targeted for treatment, are small in scale, often do not appear on satellite imagery due to pixel sizes larger than average stand size, and have not been inventoried. As these stands are identified, they would be eligible for conifer removal treatment. Conifer removal would be done by hand within 75 feet of a living aspen stem (approximately 1.5 times the average stand height) when the conifer component of the stand exceeds a stand density index (SDI) of 20. No new roads or trails would be constructed. Slash would be scattered, piled for burning, or made available for removal by the public as biomass. Slash piles would be burnt following preparation of an approved prescribed fire burn plan. Prescribed fire may also be used in these areas to achieve stated objectives.

2.3.2.5. Seeding

Seeding would occur in areas where the interdisciplinary team determines that existing understory vegetation is not sufficiently abundant (generally in areas with less than 10% relative cover of perennial grass and forb species) or diverse. Seeding would be conducted on the treated sites during the fall or early winter months, preferably prior to snow fall. Seed mixes intended for application in wilderness areas would utilize only native grasses, forbs, or shrubs and seed may be locally or commercially sourced. Seed mixes for all other areas may consist of a variety of native grasses, forbs, and shrubs as well as non-native perennial species that are able to successfully compete with invasive annuals (e.g., cheatgrass) and are adapted to site characteristics. Preference would be given to using a purely native seed mix, however if it is determined that recurring wildland fire, invasive species establishment, or other site characteristics may prevent achieving the treatment unit objectives, non-native perennials may be utilized to reduce these threats.

Seeding would occur through aerial application, ground application with the use of a rangeland drill, broadcast with a tractor or ATV, or applied by hand. Seeding in wilderness areas would only be applied by hand or aerially. Seeding with a rangeland drill would be restricted to slopes less than 20% however may be considered on slopes up to 30%,, and where stone content of the soil permits the effective use of the drill. All areas that are chained for the purpose of pinyon pine and juniper removal would be seeded. Chainings, regardless of the purpose, would be seeded aerially prior to the completion of the final pass of equipment. Other mechanical treatments for pinyon pine, juniper, or sagebrush would have seed applied prior to, during, or following the treatment occurring. Areas that are to be treated with chemicals would be seeded after the application of the herbicide in most cases and would be determined by the specification and recommendations of the herbicide label.

If chaining occurs within mountain sagebrush habitat, antelope bitterbrush seed would be applied using dribblers attached to the dozer.

Seeding may also be utilized as a secondary treatment in burned areas from prescribed fire or fire for resource benefit. These areas would be selected based upon the existence of a desirable understory that would promote natural re-vegetation of the treatment area. In the event that the

prescribed burn severity is higher than predicted or the fire moves into a non-target area, seeding may be required to ensure revegetation of the area by desirable species.

2.3.2.6. Temporary Fencing

Fencing may be required to restrict livestock from entering treated areas and fencing may also be required to restrict all large ungulate (wild and domestic) herbivory on treated areas in highly sensitive locations such as aspen stands and riparian areas. All fences constructed for the purpose of protecting project areas by restricting all ungulate herbivory would be temporary in nature and would remain in place only until the objectives are met. Cattleguards would be included in the fence design where necessary to support public safety and adequate accessibility when fences intersect existing travel routes. Cattleguards may or may not be removed when the rest of the fence is removed.

Aspen stands with low regeneration (fewer than 300 healthy stems per acre under six feet in height) may need to be fenced in order to prevent herbivory on the stand. In general, fencing of aspen stands would be used in open stands where few conifers dominate the overstory (possibly after other treatment) and on gentler slopes. Fencing would be constructed of eight-foot steel pipe rail fencing, electrical fencing, or a slash barrier fencing designed to keep elk, deer, cattle, and domestic sheep out of the treatment area. Fencing would be placed on site in such a way that visual impacts would be minimized to the fullest extent practicable. Electrical fencing may be used as a cost-effective fencing alternative that meets the objectives. Electric fencing would typically be three or four strands attached to a fiberglass or metal pole to a height of five or six feet. Corner posts would be constructed of wood. The fencing would be solar powered with a battery box to store electrical charge. The box containing batteries would be camouflaged to the surroundings to the largest degree possible. Electrical fencing would be used until objectives are met and then made available to reuse in other locations. Steel Jack, also known as steel buck and pole, fencing may be used and consists of three rails, is self-supporting, non-reflective, and requires no ground disturbance during installation. The fence would be left in place until regeneration objectives are met. At that time the fence may be removed from the stand and available for use elsewhere.

Any treatment that is seeded and any prescribed burn would be rested for a minimum of two years following treatment or until the revegetation criteria described in Section 2.3.1.7, “Grazing Restrictions” (p. 21) are achieved. To accomplish the overall and treatment-specific objectives, fencing of all or parts of treatment areas may be required. If possible, existing fences would be utilized to restrict livestock from entering treated areas.

Additionally, permanent fencing could be installed in coordination with goals defined through the Term Permit Renewal process for a given area. All fencing in sage grouse habitat, whether temporary or permanent, located within 1.25 miles of leks that have been active within the past five years will be marked in accordance with current BLM policy to improve visibility and minimize collision risk for sage grouse.

2.3.2.7. Wildland Fire for Resource Benefit and the Fire Management Plan

Wildland fire for resource benefit could be allowed on approximately 467,000 acres within the Cave Valley and Lake Valley Watersheds as prescribed within the (2004) Fire Management Plan (FMP). The FMP is divided into Fire Management Units (FMUs), of which the Cave Valley and Lake Valley Watersheds intersect five: Southern Benches-Veg, Northern Valleys, Southern Benches HVH, Bullwhack, and Highland & South Egan Range (see Map 2.1, “Fire for Resource

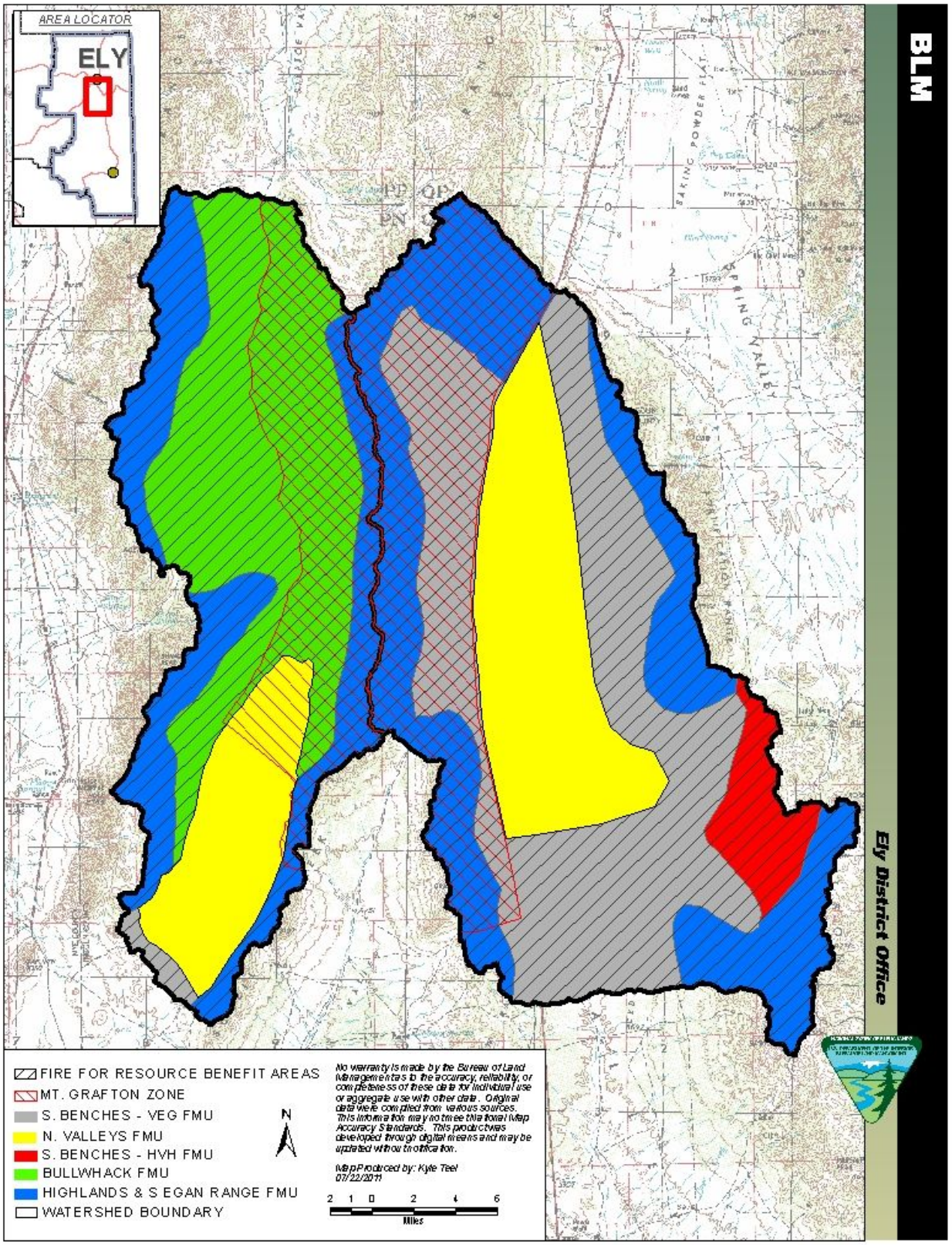
Benefit Areas in Cave Valley and Lake Valley Watersheds" (p. 33)). Each of these FMUs contains objectives which outline a target for the individual fire for resource benefit size along with decadal acreage limits as presented in Table 2.1, "Wildland Fire for Resource Benefit by Fire Management Unit (FMU) and the acreage of each FMU within the Cave Valley and Lake Valley Watersheds" (p. 32). Targets for individual fire size would remain the same as identified for each of the FMUs. Decadal acres allowed within the Southern Benches HVH and Northern Valley FMUs for wildland fire for resource benefit would remain as calculated on a proportional basis. Decadal acres allowed within the Cave Valley and Lake Valley portion of the Bullwhack FMU would be 10,000 acres and 50,000 for the Southern Benches – Veg and Highland and South Egan Range FMUs. These acreage adjustments are to allow wildland fire for resource benefit within the treatment units as well as consideration for ignitions outside of the treatment units where fire could be allowed to be reintroduced to the landscape. Additionally, approximately 50% of the Mount Grafton Fire Use Zone intersects the watersheds. The Mount Grafton Fire Use Plan emphasizes the objectives outlined in the FMP and acts as an operational implementation plan for wildland fire for resource benefit that occurs within this zone.

If ignitions are to be considered for wildland fire for resource benefit, the mechanical and prescribed fire treatment methods identified within Section 2.3, "Aspects Common to Alternatives A and B" (p. 17) may be implemented as part of the fire management strategy. In the case of a wildland fire for resource benefit, the BLM would inform the potentially impacted landowners within the area as to the objectives and strategy being employed. Ignitions within or adjacent to the designated treatment units would be considered for wildland fire for resource benefit if conditions are appropriate for the fire to accomplish the objectives listed for the treatment unit.

Table 2.1. Wildland Fire for Resource Benefit by Fire Management Unit (FMU) and the acreage of each FMU within the Cave Valley and Lake Valley Watersheds

Fire Management Unit Name	Percent of Area*	Wildland Fire for Resource Benefit Burn Targets		
		Individual Wildland Fire for Resource Benefit (acres)	Decadal Acres	
			Total Acres	Watersheds Proportional Acres
Southern Benches-Veg	26	5,000	50,000	13,000
Northern Valleys	20	0	0	0
Southern Benches HVH	3	10,000	50,000	1,500
Bullwhack	20	5,000	10,000	2,000
Highland & South Egan Range	31	50,000	100,000	31,000

*Represents the percent of the FMU that occurs within the Cave Valley and Lake Valley Watersheds and is used to calculate the proportional acres listed in the table.



Map 2.1. Fire for Resource Benefit Areas in Cave Valley and Lake Valley Watersheds

2.3.3. Management of Prior Rangeland Seeding Projects

During the late 1950s through the early 1970s, several seeding projects were established in Cave Valley and Lake Valley. The intent of these projects was to provide for increased livestock grazing forage. Long-term management of these projects has not been established. Therefore, the purpose of this plan is to establish long-term management of the rangeland seeding projects in Cave Valley and Lake Valley (see Map 2.2, "Existing Rangeland Seeding Projects in Cave Valley and Lake Valley Watersheds" (p. 35) and Table 2.2, "Existing Rangeland Seeding Projects in Cave Valley and Lake Valley Watersheds" (p. 34)).

Table 2.2. Existing Rangeland Seeding Projects in Cave Valley and Lake Valley Watersheds

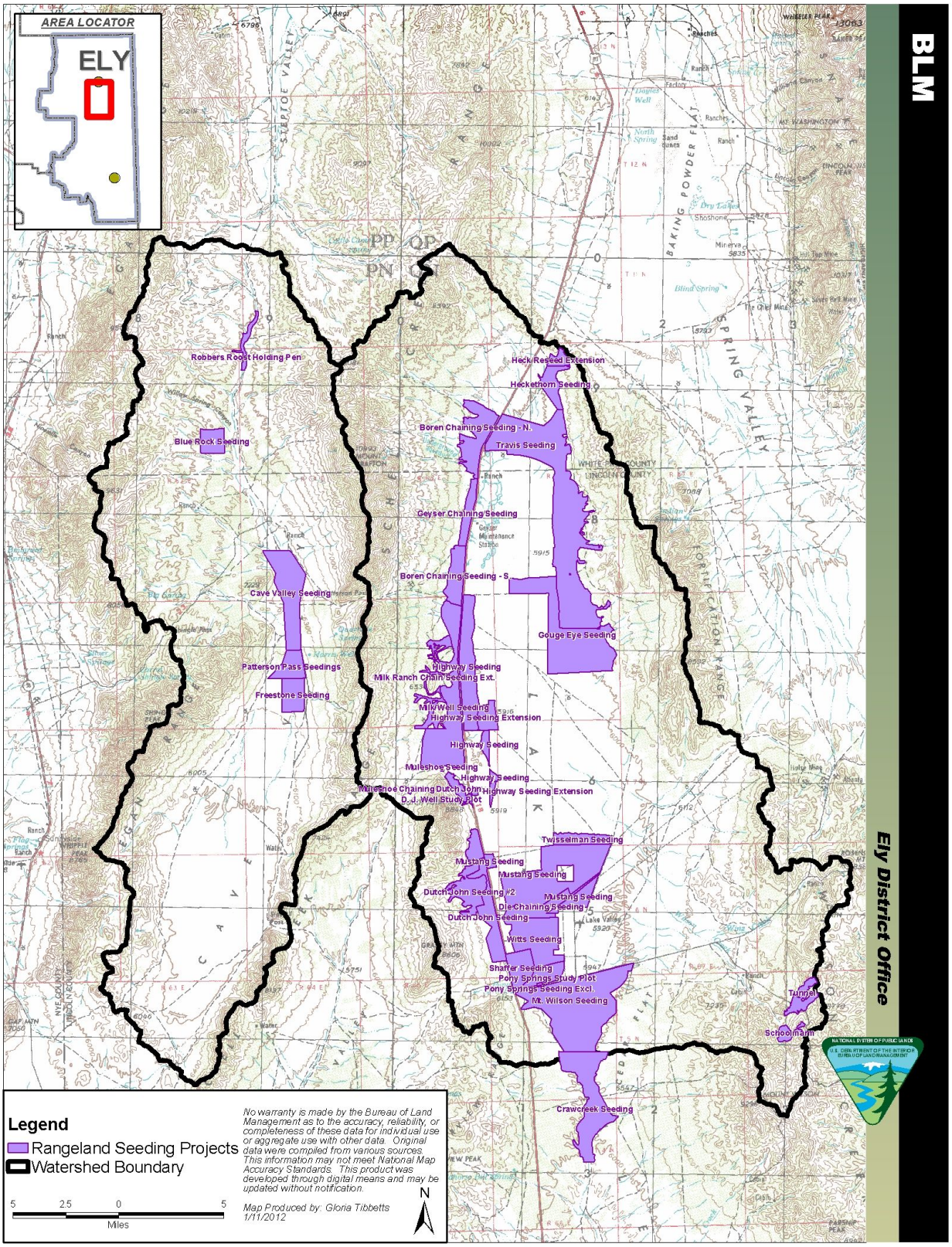
Watershed	Seeding Name	RIPS (Project) Number	Acres
Cave Valley	Cave Valley Seeding	550799	3,135
Cave Valley	Patterson Pass Seeding	550631	960
Cave Valley	Freestone Seeding	550756	1,140
Cave Valley	Blue Rock Seeding	550643	800
Lake Valley	Heck Reseed Extension	550701	358
Lake Valley	Heckethorn Seeding	550791	874
Lake Valley	Highway Seeding	550613	3,153
Lake Valley	Gouge Eye Seeding	551053	5,689
Lake Valley	Highway Seeding Extension	554039	835
Lake Valley	Twisselman Seeding	554235	853
Lake Valley	Mustang Seeding	551078	6,512
Lake Valley	Witts Seeding	551054	2,840
Lake Valley	Shaffer Seeding	550152	1,181
Lake Valley	Milk Well Seeding	550422	4,501
Lake Valley	Travis Seeding	550499	11,329
Lake Valley	Dutch John Seeding #2	550918	2,203
Lake Valley	Dutch John Seeding	550624	1,740
Lake Valley	Mt. Wilson Seeding	550560	7,427

2.3.3.1. Goals and Objectives

- Provide forage and habitat for sage grouse and other wildlife species
- Maintain an alternative forage source for livestock grazing

2.3.3.2. Seeding Management Plan

These seeding projects, or portions thereof, may be treated when average shrub cover exceeds 35 percent or average tree cover exceeds 20 percent, or when shrub cover falls below 10 percent. Average sagebrush cover following treatment shall be within 15 and 25 percent of sagebrush cover for nesting sage grouse. Treatment will be completed in accordance with the restrictions listed in Section 2.3.1, "Treatment Restrictions Common to All Treatments" (p. 17). Treatment methods will be determined on an individual treatment basis and could include, but are not limited to, mowing, chaining, other mechanical treatments, prescribed fire, chemical treatments, and/or re-seeding. In areas that are reseeded, a seed mix of native species including forbs that are beneficial to sage grouse would be used.



Map 2.2. Existing Rangeland Seeding Projects in Cave Valley and Lake Valley Watersheds

2.3.4. Vegetation Monitoring

Monitoring would be conducted before and after implementation of the proposed vegetation treatments to establish baseline vegetation characteristics and determine post treatment success towards meeting treatment objectives. Additional monitoring objectives and procedures related to livestock grazing are stated in Section 2.3.1.7, "Grazing Restrictions" (p. 21). All monitoring techniques would follow the methods described in BLM manuals and technical references.

Monitoring locations would be randomly chosen within the project area and monitoring would be conducted at least one growing season prior to the implementation of the treatment. Additional monitoring points may be established post-treatment if it is determined that they are needed. Vegetation monitoring methods may include, but are not limited to, line-point intercept for cover, two meter belt transects for density, and photographs. The same monitoring locations and methods used to establish baseline data would be used to determine if post treatment vegetation objectives are being met. Additional monitoring locations and methodologies may be employed if needed to address resource concerns and will conform to BLM Handbooks and/or Technical References.

2.3.5. Wildlife Corridors

There are three wildlife corridors proposed that are intended to open a connecting route for sage grouse between breeding and nesting habitat to summer brood-rearing habitat. Breeding and nesting habitat would include leks and sagebrush habitat adjacent to leks that provide adequate sagebrush and herbaceous cover for nest concealment. Sage grouse are known to frequently nest within three miles of their breeding site, but are also known to nest outside this area where there is suitable nesting habitat. Summer brood-rearing habitat frequently includes riparian areas that typically occur at higher elevations where grasses and forbs are still vigorous later in the summer. The Silver Spring and Willow Creek Wildlife Corridors occur within Treatment Unit S-1 at the northwest corner of the Cave Valley Watershed. The Willow Creek Wildlife Corridor also crosses the boundary into a small area of Treatment Unit W-1. The Table Mountain Wildlife Corridor is located in Treatment Unit S-10 at the southeast corner of the Lake Valley Watershed.

Corridor treatments would focus on the removal of pinyon pine and juniper trees in an effort to improve the health of the sagebrush vegetation community and eliminate potential predatory perches. Hand cutting, mastication, and other mechanical methods for individual tree removal would be preferred as primary treatments in these areas. Prescribed fire may also be used where topography and other physical limitations exist. Chemical treatments that would affect the health of the existing sagebrush community would be avoided. Mechanical methods for sagebrush restoration and seeding could be used to achieve the objectives identified for the larger treatment units in which the corridors are located.

2.3.6. Range Improvements

Several range improvement projects are proposed in this EA including fence reconstruction, a well development, authorization of several reservoirs, and the replacement and potential extension of several existing pipelines.

Weed Risk Assessments will be conducted prior to the construction or reconstruction of range improvements on a site specific basis. All stipulations required in the assessment will be followed during implementation of the project to minimize the introduction and spread of weeds. All

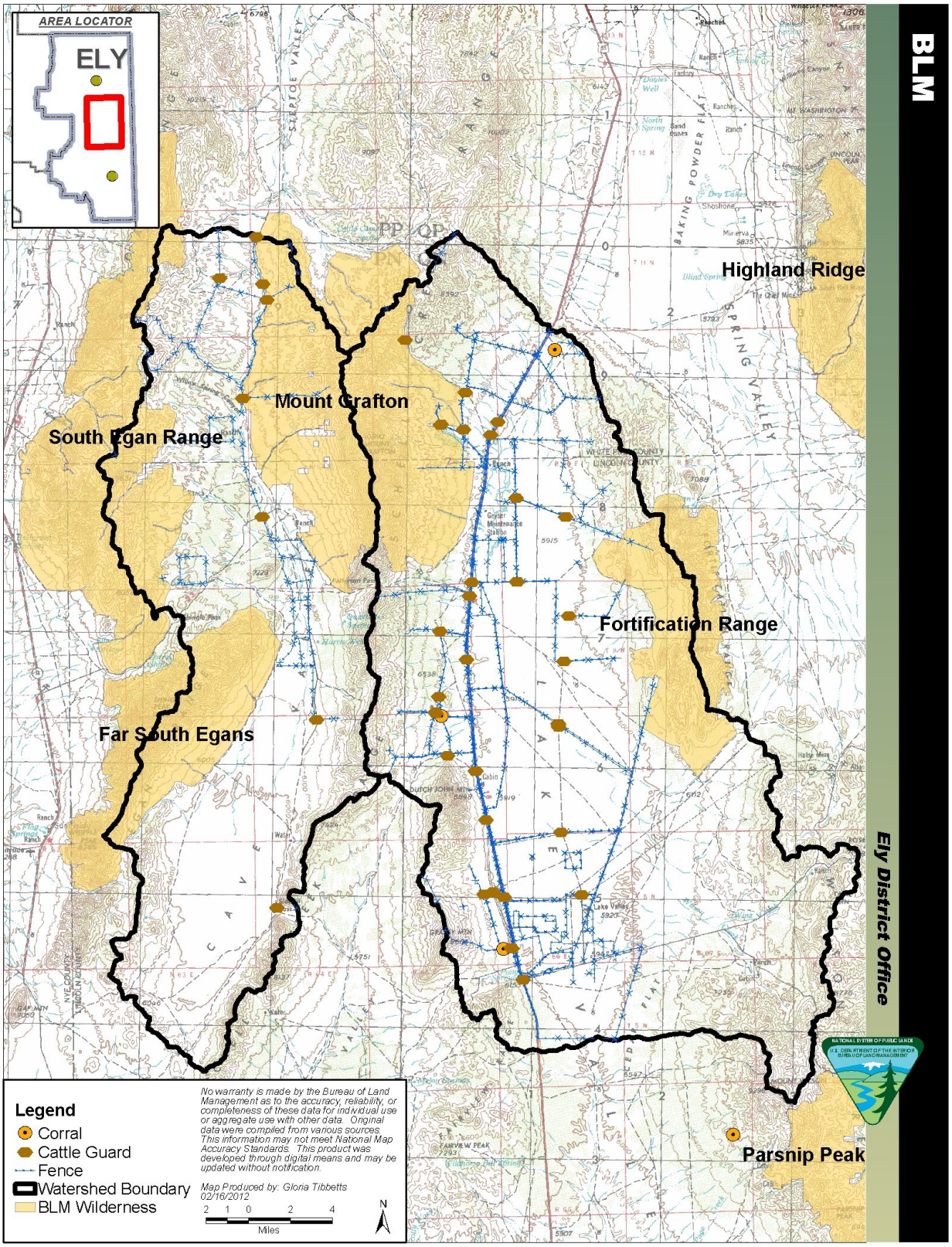
state water rights associated with these projects will be the responsibility of the users of the projects to obtain or maintain the right of the use of the water from the state. All construction and reconstruction of the projects must be completed to BLM specifications and is subject to final inspection and approval. Refer to BLM handbook H-1740-1 *Renewable Resource Improvements and Treatment Guidelines and Procedures* and H-1741-2 *Water Developments*. Permittees will be required to enter into a new Cooperative Range Improvement Agreement, BLM Form 4120-6, prior to implementation of the project.

2.3.6.1. Fence Replacement

Rangeland fences, riparian exclosures, corrals, and cattleguards serve an important role in managing livestock on the landscape. Construction methods and materials used to construct these developments vary depending on the period of time that they were built. Many of the fences and corrals within the Cave Valley and Lake Valley Watersheds were constructed of juniper posts over 50 years ago and have reached the end of their intended life span. The intent of this section is to authorize the maintenance and reconstruction of all existing fences witinh the Cave Valley and Lake Valley watersheds. Fences will be required to comply with the BLM wildlife specifications outlined in BLM Handbook H-1741-1 *Fences*. Additionally, this section is intended to support recent guidance on marking or moving fences in sage grouse habitat to minimize mortality from predation and collisions.

Reconstruction of fences would include replacement of the existing wire, old juniper posts, and H-braces. Approximately 400 miles of fences exist within these watersheds; however not all sections of the fences may need to be reconstructed. Elk and deer jumps would be installed in appropriate locations to decrease the risk of big game species being injured while crossing the fences in high big game density areas. In sage grouse designated areas, fences may be removed, rerouted, and/or flagged in accordance with current specifications. Adjustments may be conducted up to one quarter mile from the current fence alignments in situations where resources would benefit from relocation. These circumstances include, but are not limited to, fences located within 1.25 miles of an active sage grouse lek, fences located in areas where erosion or other factors require constant repair, or fences that cause some other hazard to wildlife, wild horses, or livestock, or health and human safety. The new fence location must not increase adverse impacts on any resources affected by the existing fence location. Cultural surveys must be conducted, as applicable, for the new fence location prior to installation.

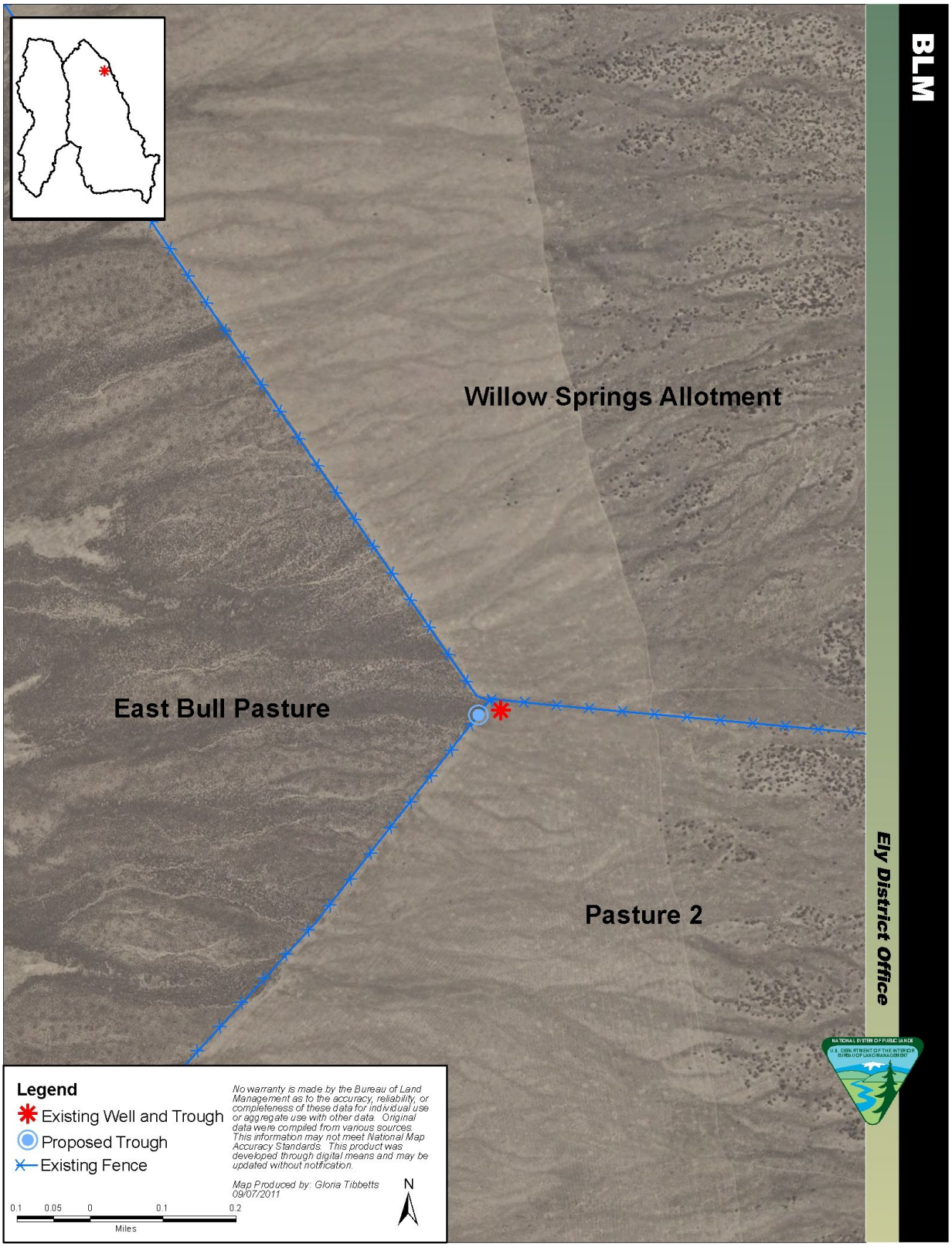
Typical equipment that may be used to remove and reconstruct fences includes pickup trucks, skid steer or similar tractors, and all-terrain vehicles (ATV or UTV). Removal of pinyon pine and juniper trees within ten feet of either side of the fence and mowing brush directly in the path of the fence would be authorized to facilitate construction and improve the visibility of the fence to wildlife.



Map 2.3. Fences, Corrals, and Cattleguards in Cave Valley and Lake Valley Watersheds

2.3.6.2. Well Development

The intent of this proposal is to authorize the use of a well and trough located on the north side of Pasture 2 (see Map 2.4, "Proposed Well Development" (p. 40)) near the fence line of the East Bull Pasture in the Geyser Ranch Allotment. This project is dependent on the user's ability to transfer stock water rights to the well from another area of the allotment. Currently a small trough is located only in Pasture 2. If approved, a trough would be placed in the fence line to provide water to both the East Bull Pasture and Pasture 2. Escape ramps for wildlife will be installed. The well is located at legal description T10N R66E Sec 22 NWNW.



Map 2.4. Proposed Well Development

2.3.6.3. Reservoir Authorizations and Reconstruction

Reservoir reconstruction will stay within the original footprint of the improvement. Prior to all reconstruction activities, the permittee is required to contact the BLM for approval. The reservoir shall be repaired to specifications outlined in Chapter 5 of the BLM Handbook H-1741-2 *Water Developments*. Typical equipment needed to maintain reservoirs includes bulldozers and backhoes, which would be used to physically remove sediment from the reservoir. Removed material would be used to reinforce the dam and overflow bypass. If excessive silt is in the reservoir, the permittee will work with the BLM to remove and dispose of the excess soil on a case-by-case basis. After reinforcement, a BLM-approved seed mix that is appropriate for resisting erosion would be planted.

The legal description of the Cave Valley Seeding and Haggerty Wash Allotment reservoirs to be authorized is as follows:

1. R64E T08N Sec. 04 NWNE
2. R64E T09N Sec. 33 SWNE

The legal description of the Cave Valley Ranch Allotment reservoir to be authorized is as follows:

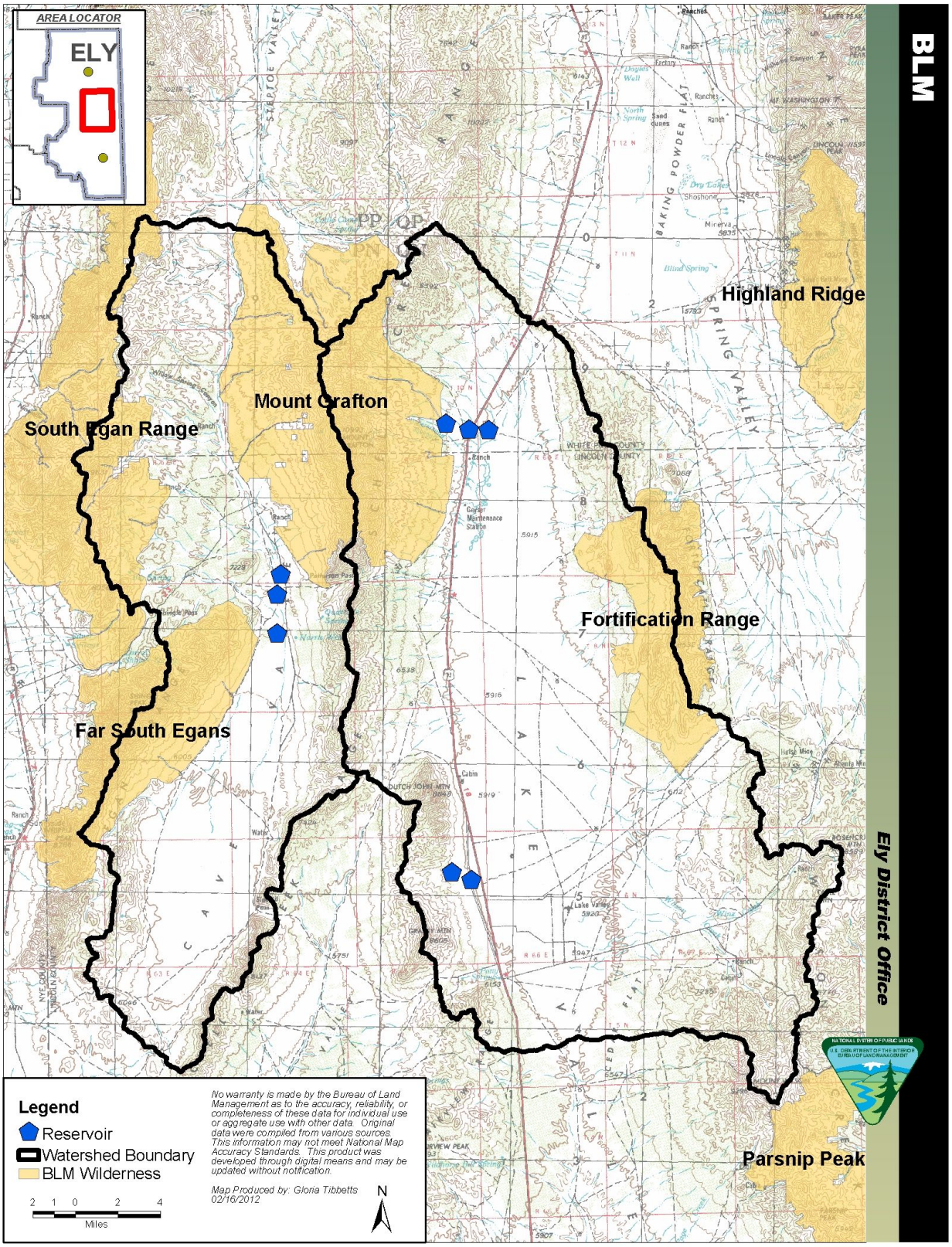
1. R64E T08N Sec. 16 NENW

A wing wall water control structure would need to be placed into the Cave Valley Wash to divert water back into the reservoir. The structure would be constructed of concrete or rock and would allow water to flow over the structure during high flow events. The banks of the wash may be reinforced to protect the structure from erosion.

The reservoir would be fenced in a way that would allow both the permittees in the Cave Valley Ranch and the Cave Valley Seeding Allotments to utilize the reservoir. This will be accomplished by enclosing the reservoir and installing gates to be opened and closed when livestock are in their respective allotments or a fence would be constructed across the pond to allow use of the reservoir by both permittees at the same time. Big game animal jumps would be installed in the existing fence and where needed in the newly constructed fence. Gates would be left open when cattle are not in the area.

The legal descriptions of existing reservoirs on the Geyser Ranch Allotment to be authorized for maintenance and reconstruction are as follows:

1. R65E T10N Sec. 25 SESW
2. R65E T10N Sec. 26 NESW
3. R66E T10N Sec. 30 SESW
4. R65E T06N Sec. 11 NESW
5. R65E T06N Sec. 12 SESW



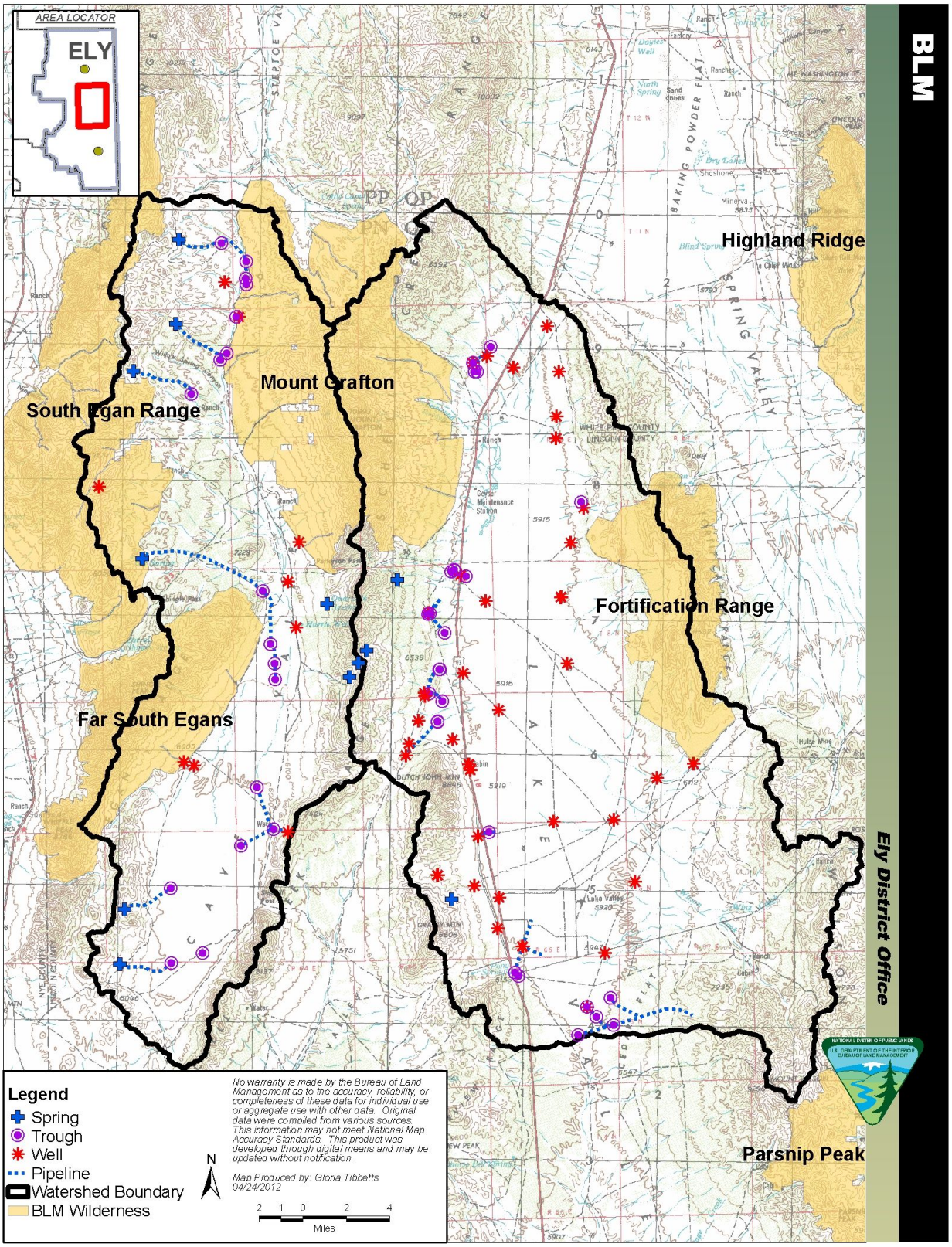
Map 2.5. Reservoirs in Cave Valley and Lake Valley Watersheds

2.3.6.4. Spring and Pipeline Reconstruction

Spring and pipeline reconstruction would remain within the previously disturbed area. Vegetation will be crushed from short-term use of construction equipment, but is expected to recover with no additional treatments. The old pipeline will be removed as the new pipeline is installed if in the same location.

High-Density Polyethylene pipe of a diameter sufficient to deliver the required amount of water to the troughs will be installed in a similar process as the one described below. A D-7 high track dozer with a ripper claw attached, a flatbed pickup truck, and a backhoe would be used to install the new pipeline. The pipe is bundled in large rolls of 5,000 feet and is placed on the back of the flatbed pickup truck. The pipe is then threaded over the dozer into the ripper claw in the back.

Once the pipe is fed into the ripper claw, the claw is driven into the ground at an approximate depth of three feet, the depth at which the pipe is protected from freezing and exposure due to erosion. As the dozer moves forward, the pipe is laid into the ground with little surface disturbance. At each intersection of the pipe and as needed, an air vent may be installed to release trapped air and provide vacuum relief to protect the integrity of the pipeline. The backhoe is driven behind the dozer to fill the trench over the pipeline. The backhoe is also used to load each new roll of pipe onto the back of the flatbed truck. Escape ramps for wildlife and a mechanism (float valve or shut-off valve) to control the flow of water in tanks and troughs would be installed.



Map 2.6. Existing Water Developments in Cave Valley and Lake Valley Watersheds

2.3.7. Removal of Abandoned Power Poles and Lines

An existing right-of-way (N-1037) is located directly east of Highway 93 in Lake Valley in which an above-ground telephone line was placed in 1968. A substantial portion of the line was buried in 1981, but many of the original poles and above ground line were left in place in sections of the line that are no longer functioning. As part of the watershed restoration process, the remaining non-functioning poles and wire will be removed. Poles will be cut at ground level rather than excavated to reduce the amount of necessary ground disturbance and the stumps will be 'scored' or cut to allow moisture to seep in and biodegrade the stump faster.

2.3.8. Dump Site Reclamation

As dump sites and other non-historic debris are discovered throughout the watersheds, provisions will be made for removal. Removal may involve cross-country access with trucks and other large vehicles and ground disturbance directly related to the retrieval of the identified debris. Stipulations will be followed to prevent the spread of noxious and invasive weeds. Additionally, the areas would be rehabilitated to promote revegetation of any disturbed surfaces.

2.4. Description of the Alternative A: Proposed Action

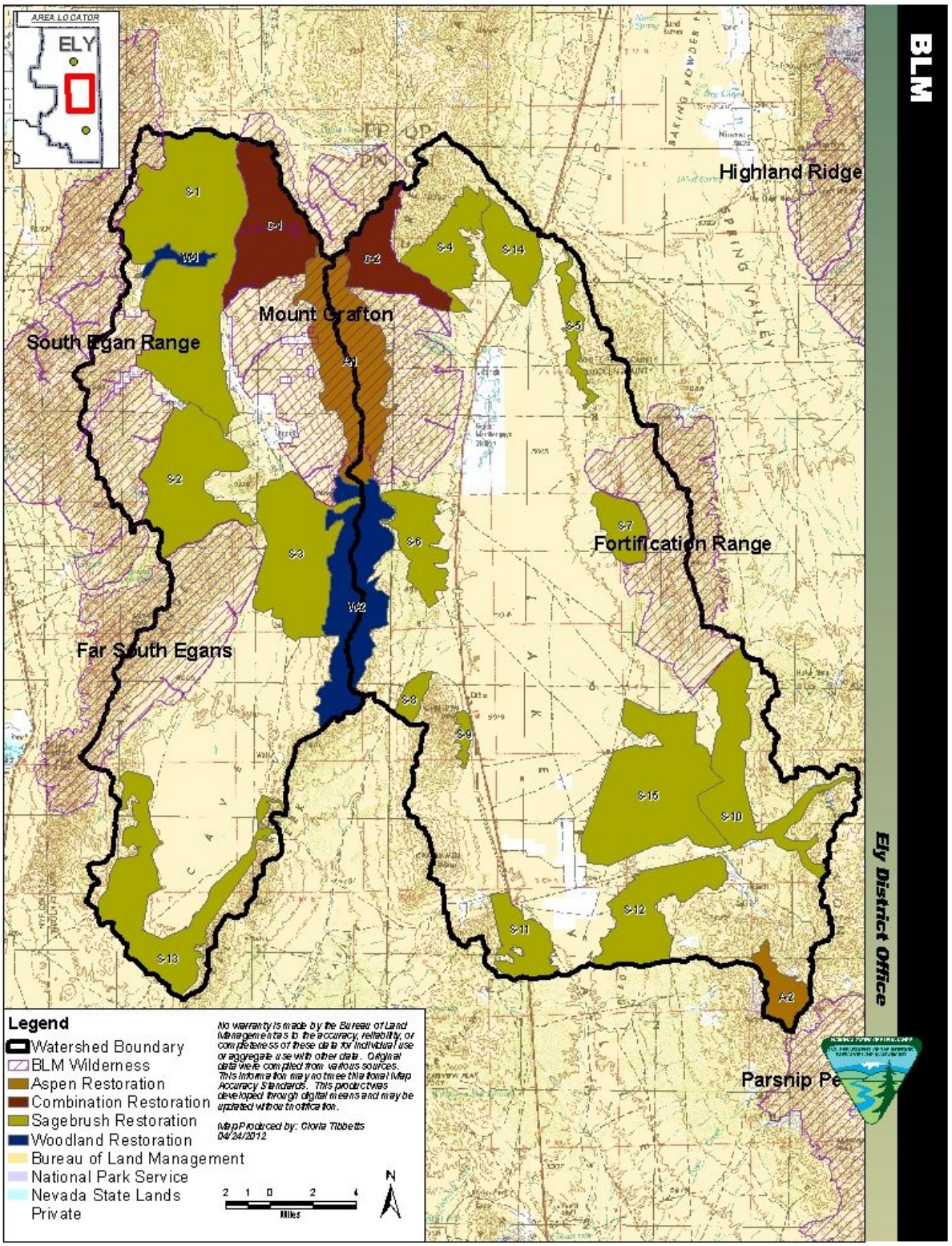
2.4.1. Vegetation Treatments

Treatment units within the Cave Valley and Lake Valley Watersheds have been selected based on the purpose and need and objectives that have been specified. Data gathered by The Nature Conservancy mapping Biophysical Setting (BPS) locations within the watershed was utilized to help determine the treatment unit boundaries. Vegetation types that deviate from reference conditions as listed within the BPS models and the desired future condition as listed within the RMP were grouped and units were defined by the majority of the grouped vegetation types. Each treatment unit has objectives that define the type and extent of primary and secondary treatments to be implemented. Treatment unit objectives are based on BPS model seral states and the evaluation of the watershed is based on stratum FRCC values. Treatment units have been grouped into four categories based on similar existing conditions and objectives for treatment: Sagebrush, Woodland, Combination, and Aspen Restoration Areas. Summary tables are provided below and more detailed information and maps are provided in Appendix A, *Site-specific information for vegetation treatments and range improvements* (p. 143).

Biophysical setting models establish a reference condition that is described as the potential vegetative community for a given site prior to European influence reflecting a range of natural disturbances. These reference conditions specify a range, in percentages, of seral classes that describe the vegetation progression post-disturbance. The RMP utilized the BPS data in delineating the vegetative goals for the district. The percentages within the RMP vary slightly from the BPS models for certain vegetation types. The RMP percentages are described as the desired future condition for the district for which the Ely District Office is managing towards.

Sagebrush systems within the planning area have different reference percentages defined by the BPS for the area and the desired future condition as defined by the RMP. The RMP lumps all sagebrush systems into one description with 5% of the sagebrush acres withheld for uncharacteristic exotic stands of crested wheatgrass seedings. The RMP designates desired seral

states for the crested wheatgrass seedings as well. For the purpose of defining the objectives of the treatment units, the BPS reference percentages would be used as there are no proposed treatments within crested wheatgrass seedings except those outlined in Section Section 2.3.3, "Management of Prior Rangeland Seeding Projects " (p. 34).



Map 2.7. Vegetation Treatment Units — Alternative A: Proposed Action

2.4.1.1. Sagebrush Restoration Units

There are fifteen different treatment units totaling 145,682 acres designed for sagebrush restoration (see Map 2.7, "Vegetation Treatment Units — Alternative A: Proposed Action" (p. 47)). Within each of these units only 60-75% of the area, or approximately 87,409 – 109,262 total acres, would be targeted for treatment (see Table 2.3, "Vegetation Types for all Sagebrush Restoration Treatment Units in Alternative A" (p. 48)). Appendix A provides an individual map and breakdown of each unit's total acres, targeted treatment acres, targeted vegetation type(s), incidental vegetation treatment type(s), and avoidance vegetation type(s).

Treatment objectives for all sagebrush restoration treatment units:

- Bring treated vegetation communities to 85% A-C, 5% D, 5% E and 5% U (non-native seeded).
- Reduce the amount of pinyon pine and juniper establishment within sagebrush communities by 75%.
- Improve sage grouse habitat by reducing sagebrush cover to 15-25% and increasing the herbaceous foliar cover to a minimum of 10%.
- Open wildlife corridors for sage grouse and other species by removing pinyon pine and juniper within drainages.
- Promote browse (bitterbrush, mahogany, etc.) within big game habitat.
- Suppress and stabilize cheatgrass and promote desired vegetative species.
- Meet appropriate VRM class objective for each treatment unit.

Table 2.3. Vegetation Types for all Sagebrush Restoration Treatment Units in Alternative A*

Target Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Sagebrush	126,534	75,920	94,900
TOTALS	126,534	75,920	94,900
Incidental Treatment Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Pinyon-Juniper Woodlands	6,300	0	4,725
Avoidance Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Mountain Mahogany	1,656	0	0
High Elevation Conifer (Mixed Conifer)	13	0	0
Salt Desert Scrub	3,156	0	0
Riparian Wetlands	3,763	0	0

*NOTE: All numbers within the table above have been derived from the work that The Nature Conservancy conducted based on mapping BPS locations within the watershed. If pre-monitoring indicates that vegetation types were mapped incorrectly, the error would be resolved and the percentages used to determine target acreages would be used to determine new acreages. If pre-monitoring indicates vegetation mapped as U (uncharacteristic) is a result of excess tree or shrub cover, then those acres would be added to the latest successional class (e.g., D or E) for that BPS model having the highest cover percentage in either shrub or trees. Target vegetation acreage was determined through applying a 60-75% limitation for treatment. Acreage not to exceed was determined by applying a 75% limitation. Incidental vegetation types include vegetation that is not specifically targeted, however may be treated because it may occur within the treatment polygons.

Primary treatment types would include:

- Methods for tree removal or woodland restoration:
  - Chaining

    - Mastication or other mechanical methods
    - Hand cutting
- Mechanical methods for sagebrush restoration:
    - Dixie harrow
    - Roller Chopper
    - Mowing
- Chemical treatments:
    - Tebuthiuron for suppression of pinyon pine and juniper
    - Tebuthiuron for suppression of sagebrush
- Fencing (including cattleguards where necessary)

Adaptive Management

Adaptive management allows the use of secondary treatments to achieve the objectives set forth for the treatment unit. Pre-treatment and post treatment monitoring would be conducted to determine the effectiveness of each treatment. Secondary treatments may be conducted along with primary treatments to the extent that the objectives for seral classes would be met. The primary treatment listed for each vegetation community would be the core treatment conducted; however, secondary treatments could be selected in lieu of the primary treatments if it is determined through monitoring, treatment experience, and site specific objectives that the secondary treatment could better meet project objectives.

- Prescribed Fire
- Seeding

2.4.1.2. Woodland Restoration Units

There are two different treatment units totaling 16,119 acres designed for woodland restoration (see Map 2.7, "Vegetation Treatment Units — Alternative A: Proposed Action" (p. 47)). Within each of these units only 40 - 60% of the area, or approximately 6,448 – 9,671 total acres, would be targeted for treatment (see Table 2.4, "Vegetation Types for all Woodland Restoration Treatment Units in Alternative A: Proposed Action" (p. 50)). Appendix A, *Site-specific information for vegetation treatments and range improvements* (p. 143) provides an individual map and breakdown of each unit's total acres, targeted treatment acres, targeted vegetation type(s), incidental vegetation treatment type(s), and avoidance vegetation type(s).

Treatment objectives for all woodland restoration treatment units:

- Increase the "naturalness" of the area by reducing the density of pinyon pine and juniper and creating a more mosaic pattern and varied age class in all vegetative communities.
- Bring targeted vegetation within the woodland restoration treatment units to the following:
    - Aspen
        - Keep all aspen stands on the landscape intact in the long term.
        - Achieve a successional class breakdown of: 14% A, 40% B, 25% C, 20% D, 1% E and 0% U (+/-5%).
        - Reduce conifer component within aspen stands to a stand density index (SDI) of less than 20 (relative density index [RDI] of 5%).
        - Increase aspen regeneration in 75% of treated stands to a minimum of 500 regeneration stems per acre.
        - Reduce mortality of regeneration stems by herbivory to less than 20%.
    - High Elevation Conifer (Mixed Conifer)

    - Achieve a successional class breakdown of: 20% A, 20% B, 60% C, 0% D, 0% E, and 0% U (+/-5%).
    - SDI to less than 300 (RDI of .55), target SDI of 200 (RDI of .35) in treated stands.
    - If any aspen is present, treat as an aspen stand with the goal of returning stand to a functioning aspen community.
  - Mountain-Mahogany
    - Achieve a successional class breakdown of: 10% A, 20% B, 10% C, 15% D, 45% E, and 0% U (+/-5%).
    - Increase regeneration across the landscape through disturbance that results in bare mineral soil, typically prescribed fire or fire for resource benefit.
  - Sagebrush
    - Achieve a successional class breakdown of: 85% A-C, 5% D, 5% E and 5% U (non-native seeded).
  - Pinyon Pine and Juniper Woodlands:
    - Achieve a successional class breakdown of: 5% A, 5% B, 20% C, 65% D, 5% E, and 0% U (+/-5%).
    - Reduce SDI to less than 225 (RDI of .55) post treatment for all pinyon pine and juniper woodlands treated through prescribed fire
- Improve sage grouse habitat by reducing sagebrush cover to 15-25% and increasing the herbaceous cover a minimum of 10%.
- Suppress and stabilize cheatgrass and promote desired vegetative species.
- Suppress and contain black henbane, hoary cress, and any other noxious weeds present.
- Improve northern goshawk nesting habitat through aspen restoration.
- Promote browse (bitterbrush, mahogany, etc.) within big game habitat.
- Meet appropriate VRM class objective for each treatment unit.

Table 2.4. Vegetation Types for all Woodland Restoration Treatment Units in Alternative A: Proposed Action*

Target Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Pinyon-Juniper Woodlands	7,806	3,122	4,684
Sagebrush	6,198	2,479	3,719
Mountain Mahogany	1,479	592	886
High Elevation Conifer (Mixed Conifer)	273	109	164
TOTALS	15,756	6,302	9,453
Incidental Treatment Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Salt Desert Scrub	31	0	19
Avoidance Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
High Elevation Conifer (Limber Pine, Bristlecone Pine)	1	0	0
Riparian Wetlands	232	0	0

*NOTE: All numbers within the table above have been derived from the work that The Nature Conservancy conducted based on mapping BPS models within the watershed. If pre-monitoring indicates that vegetation types were mapped incorrectly, the error will be resolved and the percentages used to determine target acreages would be used to determine new acreages. Target vegetation acreage was determined through applying a percentage to each vegetation type. Incidental

vegetation types include vegetation that is not specifically targeted, however may be treated within the treatment polygons. Acreage not to exceed for incidental treatment vegetation represents a 60% limitation for all vegetation types.

Primary treatment types would include:

- Prescribed Fire
- Fencing (including cattleguards where necessary)
- Mechanical Methods
  - Chaining
  - Mastication and other mechanical methods

Adaptive Management

Adaptive management allows the use of secondary treatments to achieve the objectives set forth for the treatment unit. Post monitoring of the primary treatment(s) would be conducted to determine the effectiveness of the treatment. Secondary treatments may be conducted within primary treatments to the extent that the objectives for seral classes would be met.

- Seeding (native seed only in Wilderness Area)

2.4.1.3. Combination Restoration Treatment Units

Combination Restoration Treatment Units encompass objectives to address multiple vegetation communities within the same area. There are two combination restoration treatment units totalling approximately 18,016 acres of which 40 – 60%, or approximately 7,206 – 10,810 acres, would be targeted for treatment (see Map 2.7, "Vegetation Treatment Units — Alternative A: Proposed Action" (p. 47) and Table 2.5, "Vegetation Types for all Combination Restoration Units in Alternative A: Proposed Action" (p. 52)). Appendix A, *Site-specific information for vegetation treatments and range improvements* (p. 143) provides an individual map and breakdown of each unit's total acres, targeted treatment acres, targeted vegetation type(s), incidental vegetation treatment type(s), and avoidance vegetation type(s).

Generally, these units are located in Wilderness Areas where treatment methods are limited and the objectives may best be achieved through the application of prescribed fire. Secondary treatment methods may also be applied for areas that do not achieve the identified objectives through primary treatment alone.

Treatment objectives for all combination restoration treatment units:

- Achieve a successional class breakdown of: 5% A, 5% B, 20% C, 65% D, 5% E, and 0% U (+/-5%) for pinyon-juniper woodlands.
- Achieve a successional class breakdown of: 10% A, 20% B, 10% C, 15% D, 45% E, and 0% U (+/-5%) for sagebrush.
- Increase "naturalness" of the area by reducing pinyon pine and juniper density within the sagebrush communities and creating a more mosaic varied age class within the Pinyon-Juniper Woodland.
- Reduce the amount of pinyon pine and juniper encroachment within sagebrush communities by 75%.
- Create mosaic varied age class within 30-50% of the Pinyon-Juniper Woodland area by creating numerous burned areas ranging in size from 10 to 300 acres.
- Preserve wilderness characteristics of the area.
- Meet Class I objectives for visual resource management.

Table 2.5. Vegetation Types for all Combination Restoration Units in Alternative A: Proposed Action*

Target Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Sagebrush	11,350	4,540	6,810
Pinyon-Juniper Woodlands	3,884	1,554	2,330
TOTALS	15,234	6,094	9,140
Incidental Treatment Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Mountain Mahogany	2,284	0	1,370
Mixed Conifer	8	0	5
Aspen	15	0	9
Avoidance Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Salt Desert Scrub	21	0	0
Riparian Wetlands	392	0	0

*NOTE: All numbers within the table above have been derived from the work that The Nature Conservancy conducted based on mapping BPS models within the watershed. If pre-monitoring indicates that vegetation types were mapped incorrectly, the error will be resolved and the percentages used to determine target acreages would be used to determine new acreages. Acreage not to exceed for incidental treatment vegetation represents a 60% limitation for all vegetation types.

Primary treatment types would include:

- Prescribed Fire

Adaptive Management

Adaptive management allows the use of secondary treatments to achieve the objectives set forth for the treatment unit. Post monitoring of the primary treatment(s) would be conducted to determine the effectiveness of the treatment. Secondary treatments may be conducted within primary treatments to the extent that the objectives for seral classes would be met.

- Seeding (native seed only in Wilderness Area)
- Fencing (including cattleguards where necessary)

2.4.1.4. Aspen Restoration Treatment Units

There are two different treatment units totaling 19,533 acres designed for aspen restoration (see Map 2.7, “Vegetation Treatment Units — Alternative A: Proposed Action” (p. 47)). Within each of these units only 60 - 80% of the area, or approximately 11,720 – 15,626 total acres, would be targeted for treatment (see Table 2.6, “Vegetation Types for all Aspen Restoration Units in Alternative A: Proposed Action” (p. 53)). Appendix A, *Site-specific information for vegetation treatments and range improvements* (p. 143) provides an individual map and breakdown of each unit’s total acres, targeted treatment acres, targeted vegetation type(s), incidental vegetation treatment type(s), and avoidance vegetation type(s).

Treatment objectives for all aspen restoration treatment units:

- Bring targeted vegetation within the treatment unit to the following
  - Aspen
    - Keep all aspen stands intact on the landscape in the long term.

- Achieve a successional class breakdown of: 14% A, 40% B, 25% C, 20% D, 1% E and 0% U (+/-5%).
- Reduce conifer component within aspen stands to a SDI of less than 20 (RDI of 5%).
- Increase aspen regeneration in 30% of treated stands to a minimum of 500 regeneration stems per acre.
- Reduce mortality of regeneration stems by herbivory to less than 20%.
- Improve northern goshawk nesting habitat through aspen restoration.

○ Sagebrush
- Achieve a successional class breakdown of: 10% A, 20% B, 10% C, 15% D, 45% E, and 0% U (+/-5%)

○ High Elevation Conifer (Mixed Conifer)
- Achieve a successional class breakdown of: 20% A, 20% B, 60% C, 0% D, 0% E, and 0% U (+/-5%).
- Reduce SDI to less than 300 (RDI of .55), target SDI of 200 (RDI of .35) in treated stands.
- If any aspen individual is present, treat as an aspen stand with the goal of returning the stand to a functioning aspen community.

○ Mountain-Mahogany
- Achieve a successional class breakdown of: 10% A, 20% B, 10% C, 15% D, 45% E, and 0% U (+/-5%).
- Increase regeneration across the landscape through disturbance that results in bare mineral soil, typically prescribed fire or fire for resource benefit.

- Promote browse (bitterbrush, mahogany, etc.) within big game habitat.
- Improve sage grouse brood-rearing habitat.
- Suppress and stabilize cheatgrass and promote desired vegetative species.
- Meet Class I objectives for visual resource management.

Table 2.6. Vegetation Types for all Aspen Restoration Units in Alternative A: Proposed Action*

Target Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Aspen	6,437	3,862	5,150
High Elevation Conifer (mixed conifer)	3,571	2,143	2,857
Mountain Mahogany	5,967	3,586	4,781
Sagebrush	1,865	1,119	1,492
TOTALS	17,894	10,709	14,280
Incidental Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Pinyon-Juniper Woodlands	527	0	316
Avoidance Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**

Riparian/Wetland	163	0	0
High Elevation Conifer (Limber Pine/Bristlecone Pine Woodland)	376	0	0

*NOTE: All numbers within the table above have been derived from the work that The Nature Conservancy conducted based on mapping BPS models within the watershed. If pre-monitoring indicates that vegetation types were mapped incorrectly, the error will be resolved and the percentages used to determine target acreages would be used to determine new acreages. Incidental vegetation types include vegetation that is not specifically targeted, however may be treated within the treatment polygons. Acreage not to exceed for incidental treatment vegetation represents a 80% limitation for all vegetation types.

Primary treatment types for Treatment Unit A-1 would include:

- Prescribed Fire
- Methods for Tree Removal or Woodland Restoration
  - Hand Cutting

Primary treatment types for Treatment Unit A-2 would include:

- Prescribed Fire
- Methods for Tree Removal or Woodland Restoration
  - Hand Cutting
- Fencing (including cattleguards where necessary)

Adaptive Management

Adaptive management allows the use of secondary treatments to achieve the objectives set forth for the treatment unit. Post monitoring of the primary treatment(s) would be conducted to determine the effectiveness of the treatment. Secondary treatments may be conducted within primary treatments to the extent that the objectives for seral classes would be met.

For Treatment Unit A-1:

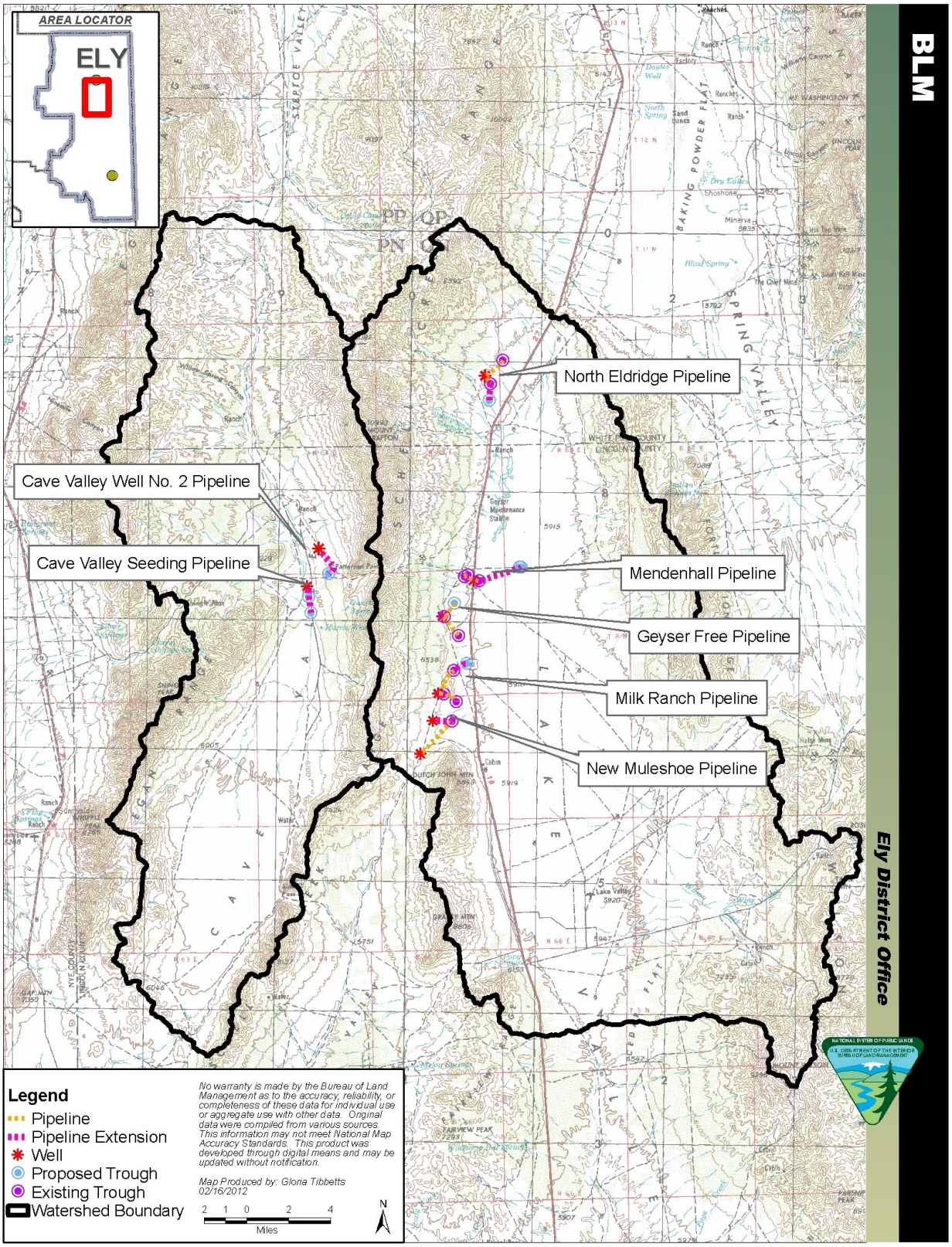
- Seeding
- Fencing (including cattleguards where necessary)

For Treatment Unit A-2:

- Methods for Tree Removal or Woodland Restoration
  - Mastication and other mechanical methods
- Seeding

2.4.2. Range Improvements

The Proposed Action incorporates all of the improvements proposed in Section 2.3.6, “Range Improvements” (p. 36) and adds the extension of several existing pipelines. Map 2.8, “Proposed pipeline extensions — Alternative A: Proposed Action” (p. 55) provides an overview of all of the pipeline projects included in Alternative A: Proposed Action. Descriptions of each proposed project are included below and individual maps can be found in Appendix A, *Site-specific information for vegetation treatments and range improvements* (p. 143).



Map 2.8. Proposed pipeline extensions — Alternative A: Proposed Action

2.4.2.1. Cave Valley

2.4.2.1.1. Cave Valley Seeding Pipeline

The proposed new pipeline would originate at the Cave Valley Seeding Well, project number 0598, and consist of approximately two miles of pipeline with two new troughs. The first trough would be located approximately one mile south of the well and the second would be located at the far southern portion of the allotment in order to supply water more evenly across the allotment. Currently, the only water sources are a reservoir that is dependent on ephemeral flows and the Cave Valley Seeding Well. Both of the existing water developments are located along the northern boundary fence of the allotment.

2.4.2.1.2. Cave Valley Well No. 2 Pipeline

The proposed new pipeline would originate at the Cave Valley Well Number 2, project number 520424, and consist of approximately two miles of pipeline with one new trough. The pipeline would be installed in the bar ditch along the Patterson Pass Road. The trough would be located approximately 400 meters south of the Patterson Pass Road. The purpose of the proposed pipeline and trough would be to facilitate the distribution of livestock higher into the Schell Creek Range. The toe slope of the Schell Creek Range receives little use by livestock due to the relative steepness and distance from water. A trough in this location would encourage the cattle to remain higher on the toe slope and reduce impacts to of livestock in the valley bottom.

2.4.2.2. Geyser Ranch Allotment

The Geyser Ranch Allotment has several well and pipeline projects that are no longer operating for unknown reasons. The proposed action is to authorize reconstruction of the projects, install three pipeline extensions, and relocate a pipeline to a more direct route from another well.

The original pipeline projects utilized a below ground water storage tank to store water for periods of peak usage, intermittent flow, or as a reserve in case of pump failure. The storage tanks were more likely for use with the windmills that were located at the site that depend on intermittent winds to provide water. Since the installation of Pump Jacks and submersible electric pumps, these storage tanks may no longer be needed. They can, however, still be beneficial to the operator for the reasons listed above and for storing water so that the Pump Jacks and generators do not need to run continuously. The recommended minimum storage capacity of the water tanks would be for three days of use by the permitted level of livestock for the specific use area. Below ground storage tanks will be required to have lids and to be enclosed by a fence for the safety of the public and wildlife. If water storage tanks will be utilized, the existing storage tanks would be inspected for integrity and replaced if needed.

The original troughs may need to be replaced due to the inadequate plumbing of the trough. Originally, water would flow down the pipeline and fill the trough. A drain pipe would then collect the overflow back into the pipeline and flow would continue to the next trough. In this type of open system the line pressure built by the water uphill of the trough is broken. This system requires that sufficient slope is available to carry the water to the next trough after it fills the first trough. In areas with insufficient slope, the plumbing to fill the trough would have to be changed to a closed system to maintain line pressure. In this type of system, an inflow pipe would “T” off

the pipeline into the trough with a float valve. The trough would fill until the float valve shuts flow off to the trough, maintaining the water pressure inside the pipeline.

Escape ramps and a mechanism (float valve or shut-off valve) to control the flow of water in tanks and troughs would be installed with all reconstruction and new construction projects.

2.4.2.2.1. North Eldridge Pipeline

Project Name	Project Number	Date Constructed	Location
North Eldridge Well	551063	1965	NWSW Sec. 13 T10N R65E
North Eldridge Pipeline	551064	1969	NWSW Sec. 13 T10N R65E

The North Eldridge Well and Pipeline are currently composed of a Pump Jack driven well, three bottomless troughs, and a below ground water storage tank. This project supplies water to Pasture One and the West Bull Pasture. The proposal is to replace approximately 1.5 miles of pipeline to the troughs and extend the southern pipeline to the south another .75 miles. A new trough would be placed at the end of the pipeline near a two track road to improve distribution in Pasture One of the allotment. The below ground storage tank at the well may be replaced as part of this project. If the tank is not replaced it will be removed and disposed.

2.4.2.2.2. Mendenhall Pipeline

Project Name	Project Number	Date Constructed	Location
Mendenhall Well	551076	1960	SWNE Sec. 2 T08N R65E
Mendenhall Pipeline	551077	1968	SWNE Sec. 2 T08N R65E

The Mendenhall Well and Pipeline is currently composed of a direct drive electric pump, three bottomless troughs, and approximately one mile of pipeline. This project currently supplies water to Pastures Four, Five, and Six. The proposal is to replace 400 yards of pipeline between the trough in Pasture Five and the trough in Pasture Four that is currently nonfunctioning and to authorize the replacement of the remainder of the pipeline if it should become nonfunctioning in the future. In addition, a new pipeline would be constructed from the well to the NESW Section 31 of T08N R66E and a trough would be placed in the fence line between Pasture Six, and Pasture Three to provide water to both sides.

2.4.2.2.3. Geyser Free Pipeline

Project Name	Project Number	Date Constructed	Location
Geyser Free Well	551073	1968	SWSW Sec. 10 T08N R65E
Geyser Free Pipeline	551074	1969	SWSW Sec. 10 T08N R65E

The Geyser Free Well and Pipeline are currently composed of a submersible pump with a generator, two bottomless troughs, a below ground storage tank, and approximately two miles of pipeline. This project supplies water to both the north and south side of Pasture Five. The original project called for a total of three troughs to be installed. The trough adjacent to the well and the trough on the south side of the pipeline were installed; however, the north trough was never installed. Currently, only the trough adjacent to the well is functioning. The proposal is to replace two miles of pipeline, install a trough at the end of the north pipeline as originally proposed, and replace the below ground storage tank if needed. The old Pump Jack would be removed from the site if it is not going to be repaired and used.

2.4.2.2.4. Milk Ranch Well Pipeline

Project Name	Project Number	Date Constructed	Location
Milk Ranch Well	550042	1945	NWSE Sec. 33 T08N R65E
Milk Ranch Well Pipeline	551072	1969	NWSE Sec. 33 T08N R65E

The Milk Ranch Well and Pipeline are currently composed of a Pump Jack, three troughs, a below ground storage tank, a stand pipe for filling water haul trucks, and approximately 2.5 miles of pipeline. This project is intended to supply water to Pasture Five and Pasture Eight. However, both sections of the pipeline are no longer functioning and water is only supplied at the well in Pasture Five. The proposal is to replace the 2.5 miles of pipelines, extend the north pipeline approximately one mile, and install a new trough at the end of the new pipeline. The new pipeline will be placed in the two track road and would terminate in the NW 1/4 NW 1/4 Section 26, T08N R65E. The below ground storage tank would be repaired or removed from the site.

2.4.2.2.5. New Muleshoe Pipeline

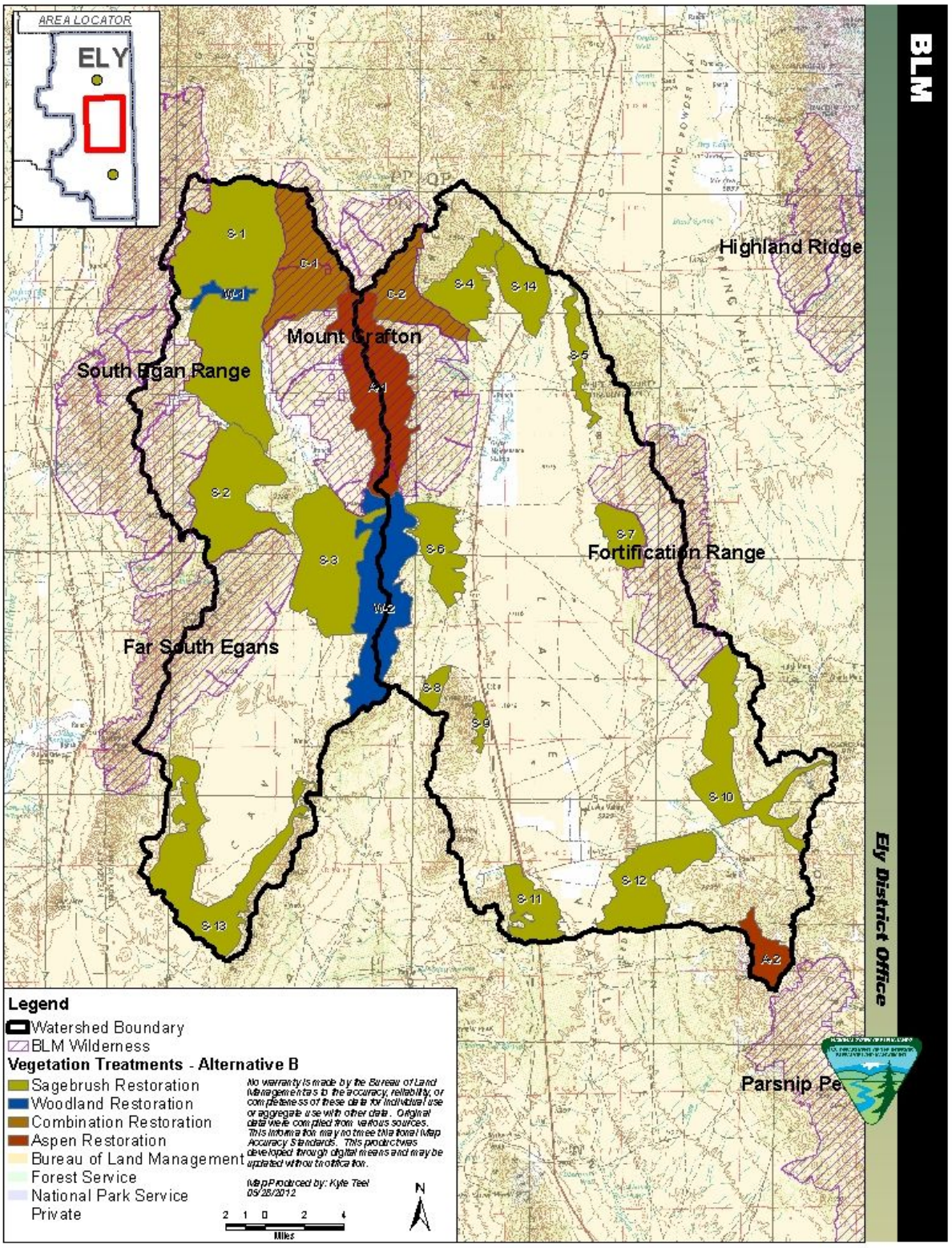
Project Name	Project Number	Date Constructed	Location
New Muleshoe Well	551066	1968	SWSE Sec. 4 T07N R65E
New Muleshoe Well Pipeline	551067	1969	SWSE Sec. 4 T07N R65E
Milk Ranch Well #2	554060	1971	SWSE Sec. 4 T07N R65E

The New Muleshoe Well and Pipeline are currently composed of a Pump Jack, two troughs, and approximately 2.5 miles of pipeline. The Muleshoe Well Pipeline is currently nonfunctioning and is in need of replacement. The Milk Ranch Well #2 is composed of a Pump Jack and bottomless trough located adjacent to the well. The distance from the Milk Ranch Well is only approximately one mile from the trough at the end of the Muleshoe Pipeline. The proposal is to install a new pipeline from the Milk Ranch Well #2 to the trough at the end of the Muleshoe Well Pipeline. This action would require approximately one mile of new pipeline through a previously disturbed crested wheatgrass seeding. The Milk Ranch Well #2 and Muleshoe Pipeline Trough are both located in Pasture Eight. All exposed pipe along the Muleshoe Well Pipeline would be removed and the area will be left to continue its recovery to a natural state.

2.5. Alternative B: Reduced Ground Disturbance

2.5.1. Vegetation Treatments

All of the treatment units from Alternative A: Proposed Action are included in Alternative B except Treatment Unit S-15. The data gathering and selection method for these units is consistent with the one described in Section 2.4.1, “Vegetation Treatments” (p. 45). The treatment methods that are proposed within each of the treatment units have been modified to reflect the basis of this alternative, which is the exclusion of all heavy mechanical and chemical treatments in all areas. This alternative includes only hand cutting, prescribed fire, seeding, and fencing as primary treatment methods in non-wilderness areas and wildland fire for resource benefit (natural start only) in wilderness areas.



Map 2.9. Vegetation Treatment Units – Alternative B: Reduced Ground Disturbance

2.5.1.1. Sagebrush Restoration Treatment Units

There are fourteen different treatment units totaling 126,261 acres designed for sagebrush restoration (Map 2.9, "Vegetation Treatment Units – Alternative B: Reduced Ground Disturbance " (p. 59)). Within each of these units only 60-75% of the area, or approximately 75,757 –94,696 total acres, would be targeted for treatment (Table 2.7, "Vegetation Types for all Sagebrush Restoration Treatment Units in Alternative B: Reduced Ground Disturbance" (p. 60)). Appendix A, *Site-specific information for vegetation treatments and range improvements* (p. 143) provides an individual map and breakdown of each unit's total acres, targeted treatment acres, targeted vegetation type(s), incidental vegetation treatment type(s), and avoidance vegetation type(s).

Treatment objectives for all sagebrush restoration treatment units:

- Bring treated vegetation communities to 85% A-C, 5% D, 5% E and 5% U (non-native seeded).
- Reduce the amount of pinyon pine and juniper establishment within sagebrush communities by 75%.
- Improve sage grouse habitat by reducing sagebrush cover to 15-25% and increasing the herbaceous foliar cover to a minimum of 10%.
- Open wildlife corridors for sage grouse and other species by removing pinyon pine and juniper within drainages.
- Promote browse (bitterbrush, mahogany, etc.) within big game habitat.
- Suppress and stabilize cheatgrass and promote desired vegetative species.
- Meet appropriate VRM class objective for treatment unit.

Table 2.7. Vegetation Types for all Sagebrush Restoration Treatment Units in Alternative B: Reduced Ground Disturbance*

Target Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Sagebrush	102,534	61,520	76,901
TOTALS	102,534	61,520	76,901
Incidental Treatment Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Pinyon-Juniper Woodlands	6,281	0	4,711
Avoidance Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Mountain Mahogany	1,655	0	0
High Elevation Conifer (Mixed Conifer)	13	0	0
Salt Desert Scrub	2,821	0	0
Riparian Wetlands	3,714	0	0

*NOTE: All numbers within the table above have been derived from the work that The Nature Conservancy conducted based on mapping BPS locations within the watershed. If pre-monitoring indicates that vegetation types were mapped incorrectly, the error would be resolved and the percentages used to determine target acreages would be used to determine new acreages. If pre-monitoring indicates vegetation mapped as U (uncharacteristic) is a result of excess tree or shrub cover, then those acres would be added to the latest successional class (e.g., D or E) for that BPS model having the highest cover percentage in either shrub or trees. Target vegetation acreage was determined through applying a 60-75% limitation for treatment. Acreage not to exceed was determined by applying a 75% limitation. Incidental vegetation types include vegetation that is not specifically targeted, however may be treated because it may occur within the treatment polygons.

Primary treatment types would include:

- Methods for tree removal or woodland restoration:
  - Hand cutting
- Seeding
- Fencing (including cattleguards where necessary)

Adaptive Management

Adaptive management allows the use of secondary treatments to achieve the objectives set forth for the treatment unit. Pre-treatment and post treatment monitoring would be conducted to determine the effectiveness of each treatment. Secondary treatments may be conducted along with primary treatments to the extent that the objectives for seral classes would be met. The primary treatment listed for each vegetation community would be the core treatment conducted; however, secondary treatments could be selected in lieu of the primary treatments if it is determined through monitoring, treatment experience, and site specific objectives that the secondary treatment could better meet project objectives.

- Prescribed Fire

2.5.1.2. Woodland Restoration Treatment Units

There are two different treatment units totaling 16,119 acres designed for woodland restoration (Map 2.9, "Vegetation Treatment Units – Alternative B: Reduced Ground Disturbance " (p. 59)). Within each of these units only 40 - 60% of the area or, approximately 6,448 – 9,671 total acres would be targeted for treatment (Table 2.8, "Vegetation Types for all Woodland Restoration Treatment Units in Alternative B: Reduced Ground Disturbance" (p. 62)). Appendix A, *Site-specific information for vegetation treatments and range improvements* (p. 143) provides an individual map and breakdown of each unit's total acres, targeted treatment acres, targeted vegetation type(s), incidental vegetation treatment type(s), and avoidance vegetation type(s).

Treatment objectives for all woodland restoration units:

- Increase the "naturalness" of the area by reducing the density of pinyon pine and juniper and creating a more mosaic pattern and varied age class in all vegetative communities.
- Bring targeted vegetation within the woodland restoration treatment units to the following:
  - Aspen
    - Keep all aspen stands on the landscape intact in the long term.
    - Achieve a successional class breakdown of: 14% A, 40% B, 25% C, 20% D, 1% E and 0% U (+/-5%).
    - Reduce conifer component within aspen stands to a stand density index (SDI) of less than 20 (relative density index [RDI] of 5%).
    - Increase aspen regeneration in 75% of treated stands to a minimum of 500 regeneration stems per acre.
    - Reduce mortality of regeneration stems by herbivory to less than 20%.
  - High Elevation Conifer (Mixed Conifer)
    - Achieve a successional class breakdown of: 20% A, 20% B, 60% C, 0% D, 0% E, and 0% U (+/-5%).
    - SDI to less than 300 (RDI of .55), target SDI of 200 (RDI of .35) in treated stands.
    - If any aspen is present, treat as an aspen stand with the goal of returning stand to a functioning aspen community.
  - Mountain-Mahogany

        - Achieve a successional class breakdown of: 10% A, 20% B, 10% C, 15% D, 45% E, and 0% U (+/-5%).
        - Increase regeneration across the landscape through disturbance that results in bare mineral soil, typically prescribed fire or fire for resource benefit.
    - Sagebrush
        - Achieve a successional class breakdown of: 85% A-C, 5% D, 5% E and 5% U (non-native seeded).
    - Pinyon Pine and Juniper Woodlands:
        - Achieve a successional class breakdown of: 5% A, 5% B, 20% C, 65% D, 5% E, and 0% U (+/-5%).
        - Reduce SDI to less than 225 (RDI of .55) post treatment for all pinyon pine and juniper woodlands treated through prescribed fire
- Improve sage grouse habitat by reducing sagebrush cover to 15-25% and increasing the herbaceous cover a minimum of 10%.
- Suppress and stabilize cheatgrass and promote desired vegetative species.
- Suppress and contain black henbane, hoary cress, and any other noxious weeds present.
- Improve northern goshawk nesting habitat through aspen restoration.
- Promote browse (bitterbrush, mahogany, etc.) within big game habitat.
- Meet Class II objectives for visual resource management.

Table 2.8. Vegetation Types for all Woodland Restoration Treatment Units in Alternative B: Reduced Ground Disturbance*

Target Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Pinyon-Juniper Woodlands	7,806	3,122	4,684
Sagebrush	6,198	2,479	3,719
Mountain Mahogany	1,479	592	886
High Elevation Conifer (Mixed Conifer)	273	109	164
TOTALS	15,756	6,302	9,453
Incidental Treatment Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Salt Desert Scrub	31	0	19
Avoidance Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
High Elevation Conifer (Limber Pine, Bristlecone Pine)	1	0	0
Riparian Wetlands	232	0	0

*NOTE: All numbers within the table above have been derived from the work that The Nature Conservancy conducted based on mapping BPS models within the watershed. If pre-monitoring indicates that vegetation types were mapped incorrectly, the error will be resolved and the percentages used to determine target acreages would be used to determine new acreages. Target vegetation acreage was determined through applying a percentage to each vegetation type. Incidental vegetation types include vegetation that is not specifically targeted, however may be treated within the treatment polygons. Acreage not to exceed for incidental treatment vegetation represents a 60% limitation for all vegetation types.

Primary treatment types would include:

- Prescribed Fire
- Methods for Tree Removal or Woodland Restoration
    - Hand Cutting
- Fencing (including cattleguards where necessary)

Adaptive Management

Adaptive management allows the use of secondary treatments to achieve the objectives set forth for the treatment unit. Post monitoring of the primary treatment(s) would be conducted to determine the effectiveness of the treatment. Secondary treatments may be conducted within primary treatments to the extent that the objectives for seral classes would be met.

- Seeding

2.5.1.3. Combination Restoration Treatment Units

Combination Restoration Treatment Units encompass objectives to address multiple vegetation communities within the same area. There are two combination restoration units for approximately 18,016 acres of which 40 – 60%, or approximately 7,206 – 10,810 acres, would be targeted for treatment (see Map 2.9, "Vegetation Treatment Units – Alternative B: Reduced Ground Disturbance " (p. 59) and Table 2.9, "Vegetation Types for all Combination Restoration Treatment Units in Alternative B: Reduced Ground Disturbance" (p. 63)). Appendix A, *Site-specific information for vegetation treatments and range improvements* (p. 143) provides an individual map and breakdown of each unit's total acres, targeted treatment acres, targeted vegetation type(s), incidental vegetation treatment type(s), and avoidance vegetation type(s).

Generally, these units are located in Wilderness Areas where treatment methods are limited and the objectives may best be achieved through the application of natural fire. No secondary treatment methods would be applied for areas that do not achieve the identified objectives through primary treatment alone.

Treatment objectives for all combination restoration treatment units:

- Achieve a successional class breakdown of: 5% A, 5% B, 20% C, 65% D, 5% E, and 0% U (+/-5%) for pinyon-juniper woodlands.
- Achieve a successional class breakdown of: 10% A, 20% B, 10% C, 15% D, 45% E, and 0% U (+/-5%) for sagebrush.
- Increase "naturalness" of the area by reducing pinyon pine and juniper density within the sagebrush communities and creating a more mosaic varied age class within the Pinyon-Juniper Woodland.
- Reduce the amount of pinyon pine and juniper encroachment within sagebrush communities by 75%.
- Create mosaic varied age class within 30-50% of the Pinyon-Juniper Woodland area by creating numerous burned areas ranging in size from 10 to 300 acres.
- Preserve wilderness characteristics of the area.
- Meet Class I objectives for visual resource management.

Table 2.9. Vegetation Types for all Combination Restoration Treatment Units in Alternative B: Reduced Ground Disturbance*

Target Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Sagebrush	11,350	4,540	6,810
Pinyon-Juniper Woodlands	3,884	1,554	2,330
TOTALS	15,234	6,094	9,140
Incidental Treatment Vegetation Types			

RMP Reference Name	Total Acreage	Target Acreage	Acreage Not to Exceed
Mountain Mahogany	2,284	0	1,370
Mixed Conifer	8	0	5
Aspen	15	0	9
Avoidance Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Salt Desert Scrub	21	0	0
Riparian Wetlands	392	0	0

*NOTE: All numbers within the table above have been derived from the work that The Nature Conservancy conducted based on mapping BPS models within the watershed. If pre-monitoring indicates that vegetation types were mapped incorrectly, the error will be resolved and the percentages used to determine target acreages would be used to determine new acreages. Incidental vegetation types include vegetation that is not specifically targeted, however may be treated within the treatment polygons. Acreage not to exceed for incidental treatment vegetation represents a 60% limitation for all vegetation types.

Primary treatment types would include:

- Wildland Fire for Resource Benefit

2.5.1.4. Aspen Restoration Treatment Units

There are two different treatment units totaling 19,533 acres designed for aspen restoration (see Map 2.9, "Vegetation Treatment Units – Alternative B: Reduced Ground Disturbance " (p. 59)). Within each of these units only 60 - 80% of the area, or approximately 11,720 – 15,626 total acres, would be targeted for treatment (see Table 2.10, "Vegetation Types for all Aspen Restoration Treatment Units in Alternative B: Reduced Ground Disturbance" (p. 65)). Appendix A, *Site-specific information for vegetation treatments and range improvements* (p. 143) provides an individual map and breakdown of each unit's total acres, targeted treatment acres, targeted vegetation type(s), incidental vegetation treatment type(s), and avoidance vegetation type(s).

Treatment objectives for all aspen restoration treatment units:

- Bring targeted vegetation within the treatment unit to the following:
  - Aspen
    - Keep all aspen stands intact on the landscape in the long term.
    - Achieve a successional class breakdown of: 14% A, 40% B, 25% C, 20% D, 1% E and 0% U (+/-5%).
    - Reduce conifer component within aspen stands to a SDI of less than 20 (RDI of 5%).
    - Increase aspen regeneration in 30% of treated stands to a minimum of 500 regeneration stems per acre.
    - Reduce mortality of regeneration stems by herbivory to less than 20%.
    - Improve northern goshawk nesting habitat through aspen restoration.
  - Sagebrush
    - Achieve a successional class breakdown of: 10% A, 20% B, 10% C, 15% D, 45% E, and 0% U (+/-5%)
  - High Elevation Conifer (Mixed Conifer)
    - Achieve a successional class breakdown of: 20% A, 20% B, 60% C, 0% D, 0% E, and 0% U (+/-5%).
    - Reduce SDI to less than 300 (RDI of .55), target SDI of 200 (RDI of .35) in treated stands.

        - If any aspen individual is present, treat as an aspen stand with the goal of returning the stand to a functioning aspen community.
    - Mountain-Mahogany
        - Achieve a successional class breakdown of: 10% A, 20% B, 10% C, 15% D, 45% E, and 0% U (+/-5%).
        - Increase regeneration across the landscape through disturbance that results in bare mineral soil, typically prescribed fire or fire for resource benefit.
- Promote browse (bitterbrush, mahogany, etc.) within big game habitat.
- Improve sage grouse brood-rearing habitat.
- Suppress and stabilize cheatgrass and promote desired vegetative species.
- Meet Class I objectives for visual resource management.

Table 2.10. Vegetation Types for all Aspen Restoration Treatment Units in Alternative B: Reduced Ground Disturbance*

Target Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Aspen	6,437	3,826	5,150
High Elevation Conifer (mixed conifer)	3,571	2,143	2,857
Mountain Mahogany	5,976	3,586	4,781
Sagebrush	1,865	1,119	1,492
TOTALS	17,894	10,709	14,250
Incidental Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Pinyon-Juniper Woodlands	527	0	316
Avoidance Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Riparian/Wetland	163	0	0
High Elevation Conifer (Limber Pine/Bristlecone Pine Woodland)	376	0	0

*NOTE: All numbers within the table above have been derived from the work that The Nature Conservancy conducted based on mapping BPS models within the watershed. If pre-monitoring indicates that vegetation types were mapped incorrectly, the error will be resolved and the percentages used to determine target acreages would be used to determine new acreages. Incidental vegetation types include vegetation that is not specifically targeted, however may be treated within the treatment polygons. Acreage not to exceed for incidental treatment vegetation represents a 80% limitation for all vegetation types.

Primary treatment types for Treatment Units A–1 would include:

- Wildland Fire for Resource Benefit (natural start only)

Primary treatment types for Treatment Unit A-2would include:

- Prescribed Fire
- Methods for Tree Removal or Woodland Restoration
    - Hand Cutting
- Fencing (including cattleguards where necessary)

Adaptive Management for Treatment Unit A-2

Adaptive management allows the use of secondary treatments to achieve the objectives set forth for the treatment unit. Post monitoring of the primary treatment(s) would be conducted to determine the effectiveness of the treatment. Secondary treatments may be conducted within primary treatments to the extent that the objectives for seral classes would be met.

- Seeding

2.5.2. Range Improvements

The Reduced Ground Disturbance Alternative includes all of the range improvements proposed in Section 2.3.6, "Range Improvements" (p. 36).

2.6. Alternative C: No Action

2.6.1. Vegetation Treatments

The No Action Alternative is the current management situation. There would be no vegetation treatments implemented within the proposed project areas as a result of this EA. However, treatments would still be considered and prioritized on a case-by-case basis by reviewing existing conditions and available funding resources for the planning and implementation of each individual project. Additional NEPA review would be required for each proposed treatment.

2.6.2. Range Improvements

No new construction or authorizations of range improvements would be permitted if this alternative is selected. Maintenance to the level permitted under current authorizations would continue to occur, but may not be sufficient to return the improvements to full functionality.

2.6.3. Removal of Abandoned Power Poles and Lines and Dump Site Reclamation

No removal would occur as a result of this EA. However, the BLM may pursue other enforcement measures to have the poles removed through a separate process in the future. Dump site reclamation would continue to occur on a case-by-case basis under separate, individual NEPA reviews as needed.

2.7. Alternatives Considered but not Analyzed in Detail

2.7.1. No Chemical Alternative

Under the No Chemical Alternative, all of the treatment methods listed in the Proposed Action would be implemented except the chemical treatments proposed in Section 2.3.2.2.4, "Chemical Treatments" (p. 27). This action was eliminated from further analysis because it would not achieve the purpose and need by (1) prohibiting sagebrush restoration treatments in areas where accessibility is limited and undesirable for use of prescribed fire or fire for resource benefit, (2) not allowing for sagebrush suppression while sustaining only a minimal impact to antelope bitterbrush

and other desirable species, and (3) not allowing for the promotion of grasses and forbs that are in competition with older stands of sagebrush and provide important forage for wildlife species.

2.7.2. Use of Native Seed Only Alternative

In the Use of Native Seed Only Alternative, all actions would be identical to those under the Proposed Action, except the composition of seed mixes applied after treatments. Under this alternative, only native seed would be used. This alternative was dropped from further consideration as the preference is already for native seed but allowing non-native where their use would be more efficient at achieving the listed objectives. Several non-native desirable species have been found to grow successfully in the watershed and compete within invasive annuals. The use of native seed only could potentially limit the achievement of the objectives in circumstances where there is a threat of invasive annuals and recurring wildland fires.

2.7.3. Use of Natural Fire Only Alternative

An alternative using only natural fire to affect the treatments was considered but eliminated from further consideration because, as indicated in the purpose and need statement, the watershed is in FRCC 2 with certain vegetation types being in FRCC 3. This condition results in an increase in the risk of losing key ecosystem components due to excess hazardous fuels. With these conditions, a fire would be difficult to control in some areas and would not achieve the desired results since fire severity would be increased. Additionally, there is a need to affect treatments in a more targeted manner across the watershed to achieve the purpose and need in a timelier manner. Given the uncertainty of fires starting from natural conditions, a more certain method of affecting desired changes is needed.

2.7.4. Passive Restoration Alternative

The use of only passive restoration would involve the removal of grazing allowances within the project area and avoid any active treatments to the landscape. This alternative has been eliminated from further analysis due to the current condition of the watershed. Many areas that have been identified for treatment under other alternatives are lacking a sufficient seed bank to regenerate native shrub and herbaceous understory cover without any intervention. Further, this alternative would not address the existing and expected continuation of pinyon pine and juniper encroachment on intact sagebrush habitats. This alternative would not meet the objectives stated in the Purpose and Need related to improvement of habitat or moving the landscape toward a Fire Regime Condition Class 1.

2.7.5. Hand Cutting Only Alternative

This alternative would involve the selective hand cutting of primarily young pinyon pine and juniper trees in areas where they are considered to be encroaching on predominantly sagebrush communities. By removing only a select number of the trees from sagebrush habitat and allowing many of the older trees to remain, the desired seral class stages for sagebrush communities would not be achieved. This alternative has been eliminated from further analysis due to its failure to meet the stated objectives for several of the treatment units, including those related directly to improvement of sage grouse habitat. Additionally, the sole use of hand cutting does not provide any support for the reestablishment of herbaceous understory.

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Chapter 3. Affected Environment:

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3.1. Potentially Affected Resources

Potential impacts to the following resources/concerns were evaluated in accordance with criteria listed in the H-1790-1 NEPA Handbook (2008) to determine if detailed analysis was required. Consideration of some of these items is to ensure compliance with laws, statutes, or Executive Orders that impose certain requirements upon all Federal actions. Other items are relevant to the management of public lands in general, and to the Ely District BLM in particular. The items listed in Table 3.1, "Resources that have been reviewed and dismissed from detailed analysis" (p. 71) have been reviewed and determined to be unaffected by the Proposed Action and alternatives.

Table 3.1. Resources that have been reviewed and dismissed from detailed analysis

Resource/Concern	Rationale for dismissal from detailed analysis
Prime and Unique Farmlands	No Unique Farmlands exist in the State of Nevada. Prime Farmlands would not be affected by the proposal because the characteristics which make a soil potential Prime Farmland would not be altered.
Water Quality, Drinking/Ground	Project design features, buffer zones, topography, vegetation and other natural ecosystem components act to preclude sediment from hillsides from entering waterways. The natural buffering capability of the hillsides and vegetation surrounding the intermittent and perennial streams with the added design feature buffers placed upon these same systems combine to maintain water quality.
Floodplains	The alternatives will not alter natural stream flow patterns or alter the natural variability of snowfall or other precipitation distribution which could lead to changing the timing and distribution of stream flow. No change to the quantity, duration, intensity, or frequency of stream flow events emanating from drainage networks in the analysis area would occur as a result of the proposal.
Threatened and Endangered Species	No known populations of threatened or endangered species occur within the Cave Valley and Lake Valley Watersheds.
Cultural Resources	Cultural resources would be avoided or mitigated prior to ground disturbing activities.
Native American Religious and other Concerns	Identified Native American traditional religious sites or cultural sites of importance would be avoided or mitigated prior to implementation of any treatments.
Environmental Justice	There are no known disadvantaged populations that would be adversely impacted by the project.
Human Health and Safety	All applicable safety requirements and regulations would be incorporated into the design of each treatment prior to implementation. Appropriate design features have been incorporated to minimize exposure and risk to human health and safety.
Wastes, Hazardous or Solid	No known hazardous or solid wastes exist within the Cave Valley and Lake Valley Watersheds. Any spills or discoveries of hazardous or solid wastes would be reported immediately to the approving official.
Mineral Resources	There are no approved mine plans or drilling permits within the project area. Any areas containing permitted mineral material sources would be avoided.
Wild and Scenic Rivers	There are no wild and scenic rivers in the project area.
Special Designations other than Wilderness, including Areas of Critical Environmental Concern (ACEC)	There are no ACECs or other areas with special designations located within the project area.

3.2. Air Quality

The State of Nevada, Division of Environmental Protection (NDEP) annually monitors principal pollutants for compliance with Environmental Protection Agency (EPA) established standards. In 1998 an air quality monitoring site was established in McGill, White Pine County, Nevada to

monitor PM10. PM10 is an inhalable coarse particulate less than ten microns in size which is mainly an emission from man-made sources like salt and sand application on roads in winter, work on unpaved roads, construction sites, or rock processing. The monitoring site at McGill was discontinued because PM10 measurements remained well below national air quality standards. Air Quality designations for White Pine and Lincoln Counties, Nevada for the criteria pollutants monitored by the State of Nevada are either not classified, unclassifiable/attainment, or better than National Standards. No portions of the proposed project area are in areas of nonattainment.

3.3. Soil Resources

Soils within the watershed can be characterized as deep, well-drained loams that vary in terms of coarse constituent content as slope and position on the landscape changes. Typically as slopes increase and location moves higher on the hillside, soil texture becomes coarser and soil depth becomes shallower. The nearly flat valley bottom soils have silt loam surface horizon textures and silty clay loam subsurface horizon textures. The hillside benches, otherwise known as alluvial fans and piedmonts, have shallow to moderately deep well-drained soils, which range in textural class from very fine, sandy loam to gravelly loam. Loam soils with high ash content are found in the southeastern half of Lake Valley.

3.4. Wetlands and Riparian Zones

Perennial stream systems within the two watersheds possess both lotic and lentic riparian areas in their basins. Lotic types are associated with flowing water and adjacent to streambanks. Lentic types are usually associated with non-flowing riparian systems that may or may not have surface water such as vegetation around ponds or vegetation in meadows.

The lotic riparian areas include moderately disturbed systems in the valley bottom where stream channels were altered to accommodate other water needs. The riparian vegetation in these areas is dominated by rush, sedge, and grasses. In the headwaters of the streams and some intermittent and ephemeral drainages, Quaking Aspen stands can be found either associated with lentic riparian areas or as a lone stand of trees.

Lentic riparian areas associated with stream valley systems tend to be dominated by grasses with rush and sedge components and willows common. These areas range in size from isolated patches which are only tenths of acres to stringers of vegetation which follow the stream for miles and are hundreds of feet wide. Lentic riparian areas are also associated with springs throughout the watershed. Many small, unnamed springs flow or seep and have small areas of riparian vegetation develop in and around the saturated soil. Small lentic systems may be ephemeral and dependent upon snowmelt or spring precipitation.

3.5. Vegetation

3.5.1. Rangeland Vegetation

Rangeland vegetation communities within the Cave Valley and Lake Valley Watersheds include sagebrush communities, including black sagebrush, low sagebrush, basin big sagebrush, Wyoming big sagebrush, and mountain big sagebrush communities; salt desert shrub communities, including

winterfat and greasewood communities; and mountain brush communities. Rangeland seedings of primarily crested wheatgrass are also established within the watersheds.

FRCC analysis indicates moderate to high departure from BPS reference vegetation conditions in large portions of the watersheds. The 2007 vegetation sampling data for Cave and Lake Valleys reveals that pinyon pine and juniper invasion/expansion and diminishing herbaceous cover is occurring in all the sagebrush vegetation types.

3.5.2. Forest and Woodland Vegetation

Forest and woodland vegetation within the Cave Valley and Lake Valley Watersheds consists of four primary groups of vegetation: pinyon pine and juniper woodlands; aspen forests; mixed conifer forests (including white fir (*Abies concolor*), ponderosa pine (*Pinus ponderosa*), limber pine (*Pinus flexilis*), and other species); and mountain-mahogany woodlands. Table 3.2, "Distribution of forest and woodland vegetation types in the Cave Valley and Lake Valley Watersheds" (p. 73) shows the percentage of the watershed in each category by forest and woodland vegetation type (based on biophysical settings).

Table 3.2. Distribution of forest and woodland vegetation types in the Cave Valley and Lake Valley Watersheds

Vegetation	Vegetation Group	Acres	Percent of Watershed	Average Departure
Aspen	Forest	3,755	1%	66%
Pinyon /Juniper	Woodland	65,544	11%	29%
Limber and bristlecone pine	Forest	410	5%	34%
Curlleaf Mountain-mahogany	Woodland	26238	5%	44%
Ponderosa pine	Forest	4	<1%	71%
Mixed conifer	Forest	3951	1%	54%
Spruce-fir	Forest	627	<1%	38%

The current health of the forest and woodland areas in the watershed varies by location, past disturbances, and current vegetation type. In general, due to altered disturbance regimes and the lack of repeated disturbance in the watershed, forest and woodland communities are overly dense. A large portion of the forests and woodlands are in later successional classes (Classes D and E) and often in uncharacteristic classes due to densities much greater than found in the reference condition. A complete summary of each vegetation type (BPS model) by succession class is presented in Appendix B, *Biophysical Setting Classes* (p. 209).

Quaking aspen within the Cave Valley and Lake Valley Watersheds is generally being overtopped by conifers, especially white fir, and at risk of being lost due to senescence after an aspen stand is shaded out by another coniferous tree. In addition, herbivory by ungulates (domestic and wild) reduces the regeneration of aspen to the point where aspen stands are of one age class overtopped by conifers and unlikely to persist without future disturbance. Many aspen stands have already been lost and now must be managed as white fir stands. Other stands mapped as white fir stands that have some remaining living aspen stems should be managed as aspen while it is still present regardless of current BPS.

Pinyon pine and juniper woodlands within the watershed are generally in late successional age classes. Many of the stands are in a closed canopy state due to high densities of trees. Canopy

cover that exceeds that listed within the reference condition within the BPS model can be rated as uncharacteristic native (succession class UN).

Mixed conifer stands including white fir, limber pine, ponderosa pine, bristlecone pine and spruce stands in general are over-representing in the older successional classes (classes D and E). These systems, with the exception of white fir, need fire to increase the odds of successful regeneration. Without disturbance, these communities increase in average age and density and become unhealthy and at risk of insect and disease. In addition, these communities are often at risk of uncharacteristic wildfire intensities due to ladder fuels (pinyon pine and juniper) increasing and encroaching on mixed conifer stands. Ponderosa pine is especially vulnerable to encroachment by pinyon pine and juniper.

Curlleaf mountain-mahogany is in a state of late successional age classes in the watershed due to a lack of natural or anthropogenic disturbance in the past century. Mountain mahogany requires bare mineral soil (following fire) to regenerate and, because of the lack of fire in the watershed over the past century, the result is that younger age classes are missing from the landscape.

3.5.3. Special Status Plant Species

3.5.3.1. Parish Phacelia

The Parish phacelia *(Phacelia parishii)* is an annual forb that occurs on alkaline playas and knolls at 668 – 1,805 meters in elevation. According to the Nevada Natural Heritage Program (NNHP) database there are two documented phacelia populations in Lake Valley.

3.5.3.2. Long-calyx eggvetch

The long-calyx eggvetch *(Astragalus oophorus* var. *lonchocalyx)* occurs at 1,829 – 2,280 meters in elevation. According to the NNHP database there is one documented population that spans both private and public land in Lake Valley.

3.5.4. Non-native Invasive and Noxious Species

Within the project area are several noxious thistles including Russian knapweed *(Acroptilon repens)*, black henbane *(Hyoscyamus niger)* and hoary cress *(Lepidium draba)*. All of these plants spread easily into disturbance areas. Cheatgrass *(Bromus tectorum)* is interspersed within the uplands, occurring more frequently in disturbed areas. At this point, no fire frequency issues due to cheatgrass cover occur in the two watersheds. Halogeton *(Halogeton glomeratus)* is found in lower elevations along roads.

3.6. Fish and Wildlife Resources

3.6.1. Fish and Wildlife

Wildlife habitat and associated species are diverse and widespread within Cave Valley and Lake Valley Watersheds. Big game species that occur within the project area include Rocky Mountain elk, mule deer, pronghorn antelope, and desert bighorn sheep. Rocky Mountain elk occur in a wide variety of habitats from valley benches during winter to higher elevations during the summer

and fall. The Ely Resource Management Plan delineates 589,979 acres of yearlong elk habitat in and near the project area. Approximately 61,918 acres of crucial summer habitat is located in the northwest portion of Cave Valley in the Egan Range, southeast portion of Lake Valley in the Wilson Creek Range, and along the Schell Creek Range surrounding Mt. Grafton. Elk habitat includes mixed conifer, aspen, sagebrush-grasslands, and pinyon-juniper woodlands.

Mule deer are widespread within Cave Valley and Lake Valley Watersheds and are typically associated with middle to upper elevations. Within the project area there are 417,247 acres of year round habitat along the valley bottoms and benches. Additionally there are 4,919 acres of crucial winter habitat near Kixmiller Summit of Lake Valley and 167,800 acres of crucial summer habitat along the mountain ridges of the project area. Habitat for mule deer within the project area includes mixed conifer, aspen, big sagebrush, low sagebrush, and grasslands.

Pronghorn are widespread throughout the valley bottoms and benches within the project area. There are 301,463 acres of year round pronghorn habitat consisting of primarily sagebrush and grasslands. Pronghorn are primarily associated with sagebrush habitat mixed with antelope bitterbrush, saltbush, rabbitbrush and winterfat.

The variety of habitats within Cave Valley and Lake Valley Watersheds makes it an important area for big game year round, especially during the winter and spring. The crested wheatgrass seedings and winterfat communities are important foraging areas within the valley bottoms. The higher elevations provide important browse species such as antelope bitterbrush and mahogany, as well as additional forage. Pinyon-juniper and mahogany woodlands provide thermal and escape cover.

The project area also provides habitat for an array of other wildlife species such as coyotes, rabbits, badgers, bobcats, mountain lions, gray and red foxes, and other numerous small mammals, reptiles, amphibians, and invertebrates.

3.6.2. Migratory Birds and Raptors

3.6.2.1. Migratory Birds

Migratory birds are those listed in 50 CFR 10.13 and include many native species commonly found in the United States. Migratory birds are protected under the Migratory Bird Treaty Act (MBTA), which makes it unlawful to take, kill, or possess migratory birds.

Migratory bird nesting and foraging habitats are located throughout Cave Valley and Lake Valley Watersheds. Based on the Atlas of Breeding Birds of Nevada (Floyd et al. 2007), the following species (and others not listed) are common in Nevada and have a high probability of occurring within the project area. The Brewer's sparrow, sage thrasher, and sage sparrow are sagebrush obligate species that require large expanses of sagebrush habitat for ideal nesting conditions. Other species that nest in sagebrush shrubs include the loggerhead shrike, gray flycatcher, and green-tailed towhee. Common pinyon-juniper species in the project area are pinyon jay, western scrub jay, mountain chickadee, bushtit, and juniper titmouse and mixed conifer species include the white breasted nuthatch, hermit thrush, Cassin's finch, and Clark's nutcracker.

Many migratory bird species are heavily dependent on healthy riparian systems, with willows and cottonwoods being important habitat features. The project area includes several springs and perennial streams that represent important migratory and game bird habitat.

3.6.2.2. Raptors

Ten species of raptors have been documented with the Cave Valley and Lake Valley Watershed, with the ferruginous hawk known to nest within the project area. The ferruginous hawk is a summer nesting resident and a number of nests have been recorded over the years. This species breeds primarily in sagebrush and grassland areas where small mammal prey is abundant. Nests are normally constructed in lone juniper trees, which overlook large open areas on alluvial fans. The golden eagle is Nevada's largest resident bird of prey and nests primarily in cliff areas or sometimes in trees, with numerous nest sites in a territory. This highly adaptable bird is a common year-long resident of the project area and feeds primarily on small mammals. The prairie falcon is known to be a yearlong resident of Nevada. Cliffs are preferred, but nest sites seem to depend on the abundance of prey species as otherwise unsuitable nest sites are often used if prey is available. Both the Cooper's hawk and sharp-shinned hawk are tree nesters in forested areas, with the Cooper's hawk favoring riparian habitat.

3.6.3. Special Status Animal Species

The BLM 6840 Manual (2008) describes special status species as 1) species listed or proposed for listing under the Endangered Species Act (ESA) and 2) species requiring special management consideration to promote their conservation and reduce the likelihood and need for future listing under the ESA, which are designated as Bureau sensitive by the State Director(s). All Federal candidate species, proposed species, and delisted species in the five years following delisting will be conserved as a Bureau sensitive species. Table 3.3, "BLM Special Status Animal Species that have been documented or have the potential to occur within the project area" (p. 76) lists BLM Special Status Animal Species that have the potential to occur within the project area.

Table 3.3. BLM Special Status Animal Species that have been documented or have the potential to occur within the project area

	Common Name	Scientific Name
Birds	Bald eagle	*Haliaeetus leucocephalus*
	Brewer's sparrow	*Spizella breweri*
	Western burrowing owl	*Athene cunicularia*
	Ferruginous hawk	*Buteo regalis*
	Golden eagle	*Relictus solitaries*
	Greater sage-grouse	*Centrocercus urophasianus*
	Northern goshawk	*Accipiter gentilis*
	Peregrine falcon	*Falco peregrines*
	Pinyon jay	*Gymnorhinus cyanocephalus*
	Prairie falcon	*Falco mexicanus*
	Sage thrasher	*Oreoscoptes montanus*
	Short-eared owl	*Asio flammeus*
	Swainson's hawk	*Buteo swainsoni*
Mammals	Pygmy rabbit	*Brachylagus idahoensis*
	Bighorn sheep	*Ovis canadensis*
	Pallid bat	*Antrozous pallidus*
	Townsend's big-eared bat	*Corynorhinus townsendii*
	Big brown bat	*Eptesicus fuscus*
	Spotted bat	*Euderma maculatum*
	Silver-haired bat	*Lasionycteris noctivagans*
	Western red bat	*Lasiurus blossevillii*
	Hoary bat	*Lasiurus cinereus*
	California myotis	*Myotis californicus*
	Western small-footed myotis	*Myotis ciliolabrum*
	Long-eared myotis	*Myotis evotis*
	Little brown myotis	*Myotis lucifugus*
	Fringed myotis	*Myotis thysanodes*

Long-legged myotis	*Myotis volans*
Yuma myotis	*Myotis yumanensis*
Brazilian free-tailed bat	*Tadarida brasiliensis*
Western pipistrelle	*Pipistrellus hesperus*

3.6.3.1. Greater Sage-grouse

The greater sage-grouse is a BLM Sensitive Species that has been determined to be warranted for listing under the Endangered Species Act (ESA), but which is precluded by other species of higher priority (Federal Register/Vol. 75, No. 55/Tuesday, March 23, 2010). To protect greater sage-grouse and their habitat and potentially prevent the species from becoming listed under the ESA, the BLM Washington Office has recently issued two Instructional Memorandums: IM No. 2012-043 (*Greater Sage-Grouse Interim Management Policies and Procedures*) and IM No. 2012-044 (*BLM National Greater Sage-Grouse Land Use Planning Strategy*). Instruction Memorandum No. 2012-043 provides direction for the management of sage grouse habitat while updating Land Use Plans. Instruction Memorandum No. 2012-044 establishes consistent protection measures for the species and its habitat to be incorporated into the NEPA analysis that will be used to amend Land Use Plans.

Priority and general sage grouse habitat has been identified by the BLM in coordination with the Nevada Department of Wildlife. Priority habitat comprises areas that have been identified as having the highest conservation value to maintaining a sustainable sage grouse population, which includes breeding, late brood-rearing, and winter concentration areas. General habitat comprises areas of occupied seasonal and year-round habitat outside the priority habitat. The policies and procedures identified in the above mentioned IMs are designed to minimize habitat loss in both priority and general habitat and will help the BLM meet objectives to maintain and restore sage grouse habitat. Priority habitat has been identified in the Cave Valley and Lake Valley watersheds, as shown in Map 3.1, "Location and status of known sage grouse leks and priority habitat" (p. 79), and was used to guide the development of the proposed action, alternatives, and mitigation measures for this watershed restoration plan.

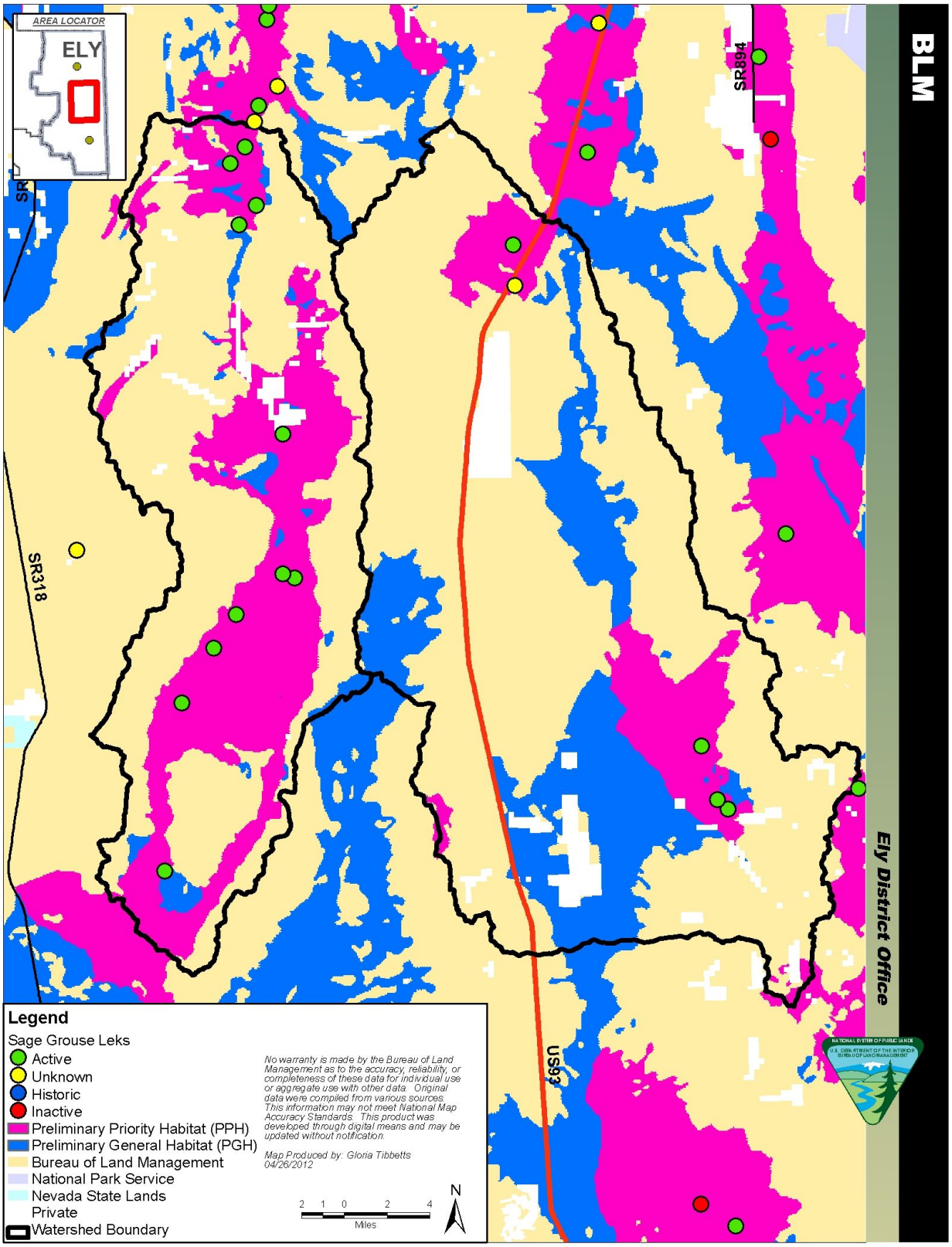
Sage grouse are sagebrush obligates that depend on large expanses of un-fragmented sagebrush habitats for successful reproduction and winter survival (Connelly et al. 2004). The characteristics of landscapes dominated by big sagebrush, including Wyoming big sagebrush, mountain big sagebrush, and basin big sagebrush, comprise the primary habitat requirements for sage grouse. Sage grouse distribution is strongly correlated with the distribution of sagebrush habitats (Schroeder et al 2004). Black sagebrush habits may not provide the vegetation characteristics to meet nesting habitat requirements as described by Connelly et al (2000), but still can provide important habitat components for sage grouse. Patches of big sagebrush mixed within black sagebrush habitats may provide nesting cover for sage grouse. Black sagebrush habitats are used primarily for summer brood-rearing habitat and may provide for wintering grouse if snow depths are light to moderate.

Preferred strutting grounds consist of shorter vegetation within or near a matrix of otherwise suitable nesting habitat, with taller, more robust sagebrush surrounding the lek for escape cover. An absence of trees or other raptor perches near the grounds is also preferred. The project area holds a mosaic of different species of sagebrush that serve as breeding, nesting, brood-rearing and wintering habitat. The sagebrush understory of productive nesting areas contains native grasses and forbs with horizontal and vertical structural diversity that provides an insect prey base, herbaceous forage for pre-laying and nesting hens, and cover for the hen while she is incubating (Schroeder et al. 2009, Connelly et al 2000, Connelly et al 2004). In arid sites as in

eastern Nevada, optimal nesting habitat contains 15-25% sagebrush canopy cover with a vigorous, diverse, herbaceous understory consisting of at least 15% perennial grass and forb cover (Connelly et al 2000). Optimal brood-rearing habitat should contain 10-25% sagebrush canopy cover, with at least 15% grass and forb cover. Past crested wheatgrass seedings that are being re-colonized by sagebrush are providing some of the better sage grouse nesting habitat in the watershed.

Shrub canopy and grass cover provide concealment for sage grouse nests and young, and are critical for reproductive success. Females have been documented to travel more than 12.5 miles to their nest site after mating, but distances between a nest site and the lek on which breeding occurred is variable. While earlier studies indicated that most hens nest within 2 miles of a lek, more recent research indicates that many hens actually move much further from leks to nest based on nesting habitat quality. Research by Wakkinen et al (1992) demonstrated that nest sites are selected independent of lek location. Hens rear their broods in the vicinity of the nest site for the first two to three weeks following hatching. Forbs and insects are essential nutritional components for chicks. Therefore, early brood-rearing habitat must provide adequate cover adjacent to areas rich in forbs and insects to assure chick survival during this period. Optimal winter habit should contain 10-30% sagebrush canopy cover exposed above the snow.

Within the Cave and Lake Valley Watersheds there are 15 active leks and one lek of unknown status according to 2011 NDOW survey data as shown on Map 3.1, “Location and status of known sage grouse leks and priority habitat” (p. 79). Male attendance on leks in the watershed is variable with counts ranging from just several to 24 males being observed displaying.



Map 3.1. Location and status of known sage grouse leks and priority habitat

3.6.3.2. Pygmy Rabbits

The pygmy rabbit is another BLM sensitive species that has recently been found not to warrant protection under the ESA (Federal Register/vol.75, No. 189/Thursday, September 30, 2010). Numerous pygmy rabbit sightings have been documented in both Cave and Lake Valleys generally within drainages with taller sagebrush. The extent of pygmy rabbit occurrence is influenced by habitat suitability as indicated by the presence of tall, dense, big sagebrush stands in combination with deep, sandy, and loose soils for burrows.

3.6.3.3. Bats

Numerous sensitive bat species inhabit or migrate through the Cave Valley and Lake Valley Watersheds. Day and night roosting sights consist of caves, mines, crevices, trees, and/or buildings and specific species may utilize different roost sites. The western red bat, hoary bat, silver-haired bat, and long-legged myotis predominantly roost in trees. The Townsend's big-eared bat, big brown bat, cave myotis, and California leaf-nosed bat predominately roost in caves or mines. Bats will forage in all habitat types, especially within riparian habitat or agricultural areas that attract insects and provide water for drinking.

3.6.3.4. Desert Bighorn Sheep

Desert bighorn sheep inhabit approximately 79,710 acres of the Schell Creek and Egan Ranges within the planning area. They typically inhabit rough, rocky and steep terrain. Their diet varies with habitat and season, however they prefer grasses and forbs, as well as shrubs.

3.7. Wild Horses and Burros

A portion of the south end of Cave Valley, approximately 61,000 acres, and a portion of the southwest end of Lake Valley, approximately 22,000 acres, lies within the Silver King Herd Management Area (HMA). The Appropriate Management Level (AML) for the entire 606,000 acres of the HMA is 60-128 wild horses. The last gather for the Silver King HMA occurred in October 2011 when 504 wild horses were removed. A population of approximately 160 wild horses currently reside within the entire Silver King HMA.

The eastern portion of the Lake Valley Watershed, approximately 128,000 acres, is located within the Eagle HMA. The Appropriate Management Level for the entire 670,000 acres of the HMA is 100-210 wild horses. The last gather for the Eagle HMA occurred in January 2011 when 686 wild horses were removed. A population of approximately 210 wild horses currently reside within the entire Eagle HMA.

3.8. Livestock Grazing

Livestock grazing operations in eastern Nevada developed during the mid- to late-1800s. The Ely RMP/EIS, to which this document is tiered, summarizes livestock grazing history in the region on pages 3.16-1 to 3.16-3.

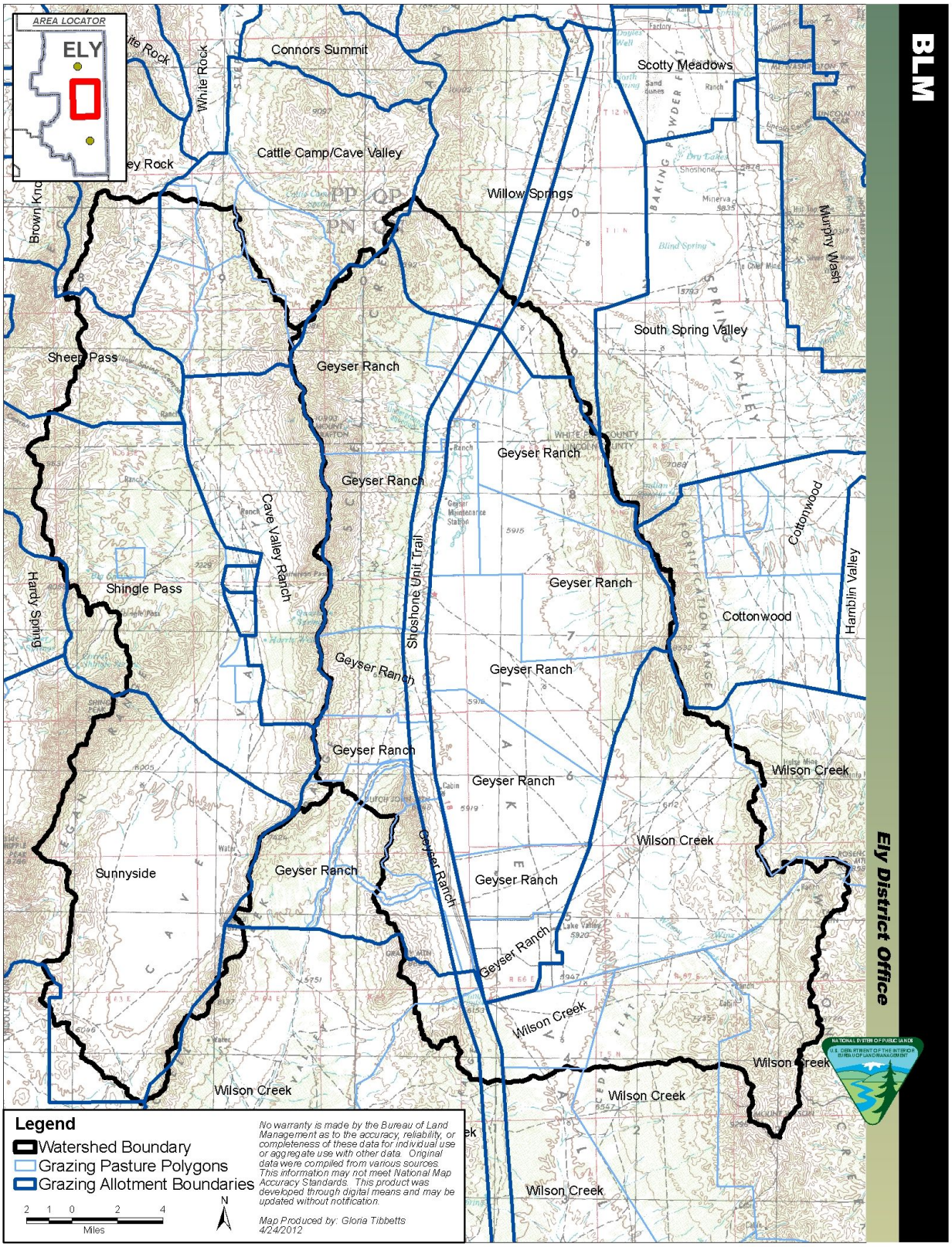
The project occurs within all or portions of the following allotments: Chimney Rock, Cattle Camp/Cave Valley, Sheep Pass, Cave Valley Ranch, Shingle Pass, Haggerty Wash, Cave Valley Seeding, Sunnyside, Wilson Creek, Geyser Ranch, Shoshone Unit Trail, and Willow Springs.

Current livestock grazing is summarized in Table 3.4, "Current Livestock Grazing within the Cave Valley and Lake Valley Watersheds" (p. 81) and allotment and pasture boundaries are shown on Map 3.2, "Grazing allotments and pastures within the Cave Valley and Lake Valley Watersheds" (p. 83).

Table 3.4. Current Livestock Grazing within the Cave Valley and Lake Valley Watersheds

Allotment Name and Number	Authorization Number	Season of Use	Kind of Livestock	Active AUMs
CAVE VALLEY WATERSHED				
Cattle Camp/Cave Valley 00903	2703458	05/15 to 11/30	Cattle	3185
Cattle Camp/Cave Valley 00903	2704615	05/15 to 11/22	Cattle	3160
Cattle Camp/Cave Valley 00903	2704624	05/15 to 11/30	Cattle	533
Cave Valley Seeding 00908	2700139	05/01 to 08/10	Cattle	200
Chimney Rock 00914	2703462	05/01 to 11/01	Cattle & Sheep	1233
Sheep Pass 00905	2704630	04/01 to 12/31	Cattle	758
Sheep Pass 00905	2700139	04/01 to 11/15	Cattle	392
Shingle Pass 00906	2704739	05/15 to 10/31	Cattle	2724
Sunnyside 21023	2704739	06/01 to 10/31 12/01 to 03/31	Cattle	5402
Cave Valley Ranch 00904	2702943	05/01 to 10/31	Cattle	2403
Haggerty Wash 00907	2704633	06/15 to 10/15	Cattle	194
LAKE VALLEY WATERSHED				
Geyser Ranch 01101	2703730	03/01 to 02/28	Cattle	12,308
Wilson Creek (Fairview) 01201	2703730	04/16 to 10/31	Cattle	890
Wilson Creek (Muleshoe) 01201	2703730	11/01 to 04/15	Cattle	3711
Wilson Creek (Pony Seeding) 01201	2703730	04/01 to 06/30	Cattle	1286
Wilson Creek (Atlanta) 01201	2703730	04/16 to 10/31	Cattle	785
Wilson Creek (Muleshoe) 01201	2703273	11/01 to 05/01	Sheep	1832
Wilson Creek (Atlanta) 01201	2703273	11/01 to 01/31	Sheep	1650
Wilson Creek (Fall Trail) 01201	2703273	10/25 to 11/01	Sheep	139
Wilson Creek (Spring Trail) 01201	2703273	05/01 to 05/05 05/31 to 06/04	Sheep	276
Wilson Creek (Brown Springs) 01201	2705100	06/01 to 06/30	Cattle	214
Wilson Creek (Summer Native) 01201	2705100	06/01 to 09/30	Cattle	1,555

Allotment Name and Number	Authorization Number	Season of Use	Kind of Livestock	Active AUMs
Wilson Creek (Brown Springs) 01201	2705103	06/01 to 06/30	Cattle	162
Wilson Creek (Summer Native) 01201	2705103	06/01 to 09/30	Cattle	1,126
Wilson Creek (Brown Springs) 01201	2705106	06/01 to 06/30	Cattle	65
Wilson Creek (Summer Native) 01201	2705106	06/01 to 09/30	Cattle	262
Wilson Creek (Summer Native) 01201	2705101	04/15 to 09/30	Cattle	544
Wilson Creek (Brown Springs) 01201	2705135	06/01 to 06/30	Cattle	162
Wilson Creek (Summer Native) 01201	2705135	06/01 to 09/30	Cattle	758
Shoshone Unit Trail 10140	2703273	05/01 to 05/05 05/31 to 06/04 10/25 to 10/29	Sheep	483
Willow Springs 10129	2700036	03/01 to 02/28	Cattle	6608



Map 3.2. Grazing allotments and pastures within the Cave Valley and Lake Valley Watersheds

3.9. Recreation

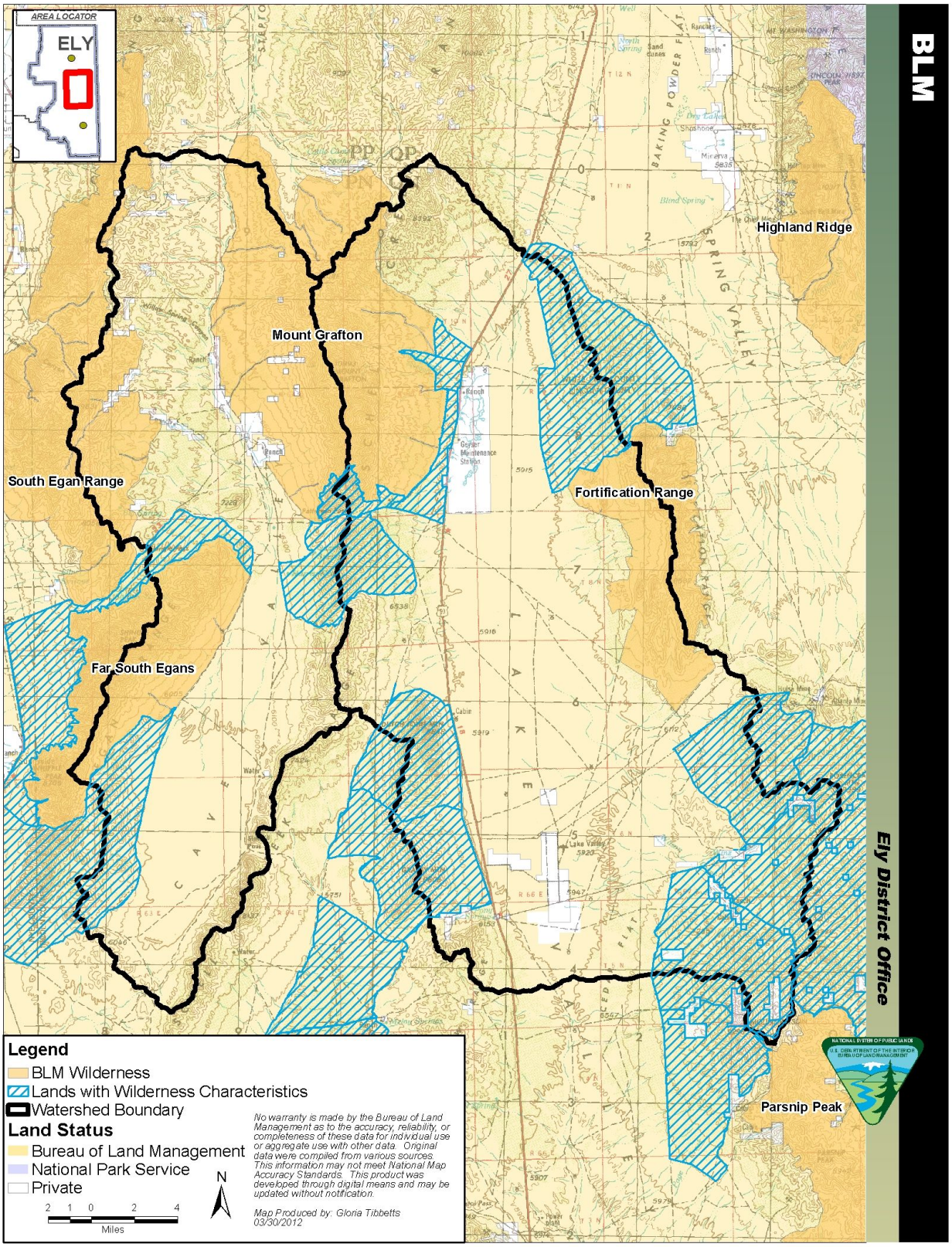
The project area is a regionally important recreation destination in Nevada. The natural and cultural diversity within the rugged hills provides the basis for a wide variety of recreational activities and is important to the area‘s recreation and tourism industries. North Creek is a designated primitive recreation site and portions of the Silver State OHV Trail cross between the valleys. Interspersed around the project area are four State Park units, Great Basin National Park, and several historic sites. Visitors enjoy a variety of recreational opportunities such as developed and dispersed camping, driving along scenic roads, hiking, mountain biking, horseback riding, wilderness experiences, fishing and hunting, rock climbing, winter activities, and interpretive and educational sites. Motorized recreation in the area can be divided into five user groups including passenger vehicles, four-wheel drive vehicles, all-terrain vehicles, utility vehicles, and off-highway motorcycles. Some users, depending primarily on mode of transportation, prefer roads, some trails, and some prefer the freedom to traverse the environment through non-motorized means.

3.10. Lands with Wilderness Characteristics (LWCs)

Portions of the project area overlap Lands with Wilderness Characteristics as shown in Map 3.3, “Lands with Wilderness Characteristics in the Cave Valley and Lake Valley Watersheds” (p. 85). An area having wilderness characteristics is defined by:

- Size - at least 5,000 acres of contiguous, roadless federal land,
- Naturalness, and
- Outstanding opportunities for solitude or primitive and unconfined types of recreation.

The 14 LWC units that overlap the two watersheds cover a total of 246,125 acres; of which 113,629 acres are within the two watershed boundaries. The 14 units meet the above criteria.



Map 3.3. Lands with Wilderness Characteristics in the Cave Valley and Lake Valley Watersheds

3.11. Wilderness

The Cave Valley and Lake Valley watersheds encompass portions of the Far South Egans, Fortification Range, South Egan Range and Mount Grafton Wilderness areas, which were designated in 2004 and 2006. These two watersheds include 60% of the Far South Egans, 66% of the Fortification Range, 26% of the South Egan Range and 86% of the Mount Grafton Wilderness areas. Mount Grafton Wilderness is split across the two watersheds. Treatments are only proposed within the Mount Grafton Wilderness. The wilderness areas are primarily visited during hunting season, Mount Grafton Wilderness, in particular.

The Wilderness Act of 1964 defines wilderness and mandates that the primary management direction is to preserve wilderness character. Although wilderness character is a complex idea and was not explicitly defined in the Wilderness Act, it may be described as the combination of biophysical, experiential, and symbolic ideals that distinguish wilderness from all other lands.

Wilderness areas, regardless of size, location, or any other feature, are unified by this statutory definition of wilderness. The four qualities of wilderness, related to wilderness character are:

- Untrammeled ─ area is unhindered and free from modern human control or manipulation.
- Natural ─ area appears to have been primarily affected by the forces of nature.
- Undeveloped ─ area is essentially without permanent improvements or human occupation and retains its primeval character.
- Outstanding opportunities for solitude or a primitive and unconfined type of recreation ─ area provides outstanding opportunities for people to experience solitude or primeval and unrestricted recreation, including the values associated with physical and mental inspiration and challenge.

Mount Grafton Wilderness

Size: acres 78,743 acres
Elevation: 6,000 – 10,991 feet
Designation: White Pine County Conservation, Recreation and Development Act (2006)

Area Description

The Mt. Grafton Wilderness Area is large and extremely rugged with numerous rock outcrops, crags, and peaks scattered throughout the high country. The broad slopes of the mountain are host to extensive stands of quaking aspen and mountain mahogany as well as conifer species including white fir, limber, and bristlecone pine. Streams provide adequate water for monkey flower, wild rose and primrose. Other flowers in the area include blue flax, cacti, arrow leaf balsam root and milk vetch.

Several creeks rush down from the higher elevations through large aspen groves. North Creek, a designated Scenic Area has a large riparian area and supports one of the few fisheries located entirely on BLM administered lands within the Ely District. The Mt. Grafton Wilderness is known for its outstanding populations of elk and mule deer. Also in the area are pronghorn antelope and there is potential for Rocky Mountain bighorn sheep. Recreational opportunities include hunting, camping, hiking, backpacking, and horseback riding.

South Egan Range Wilderness

Size: 67,214 acres
Elevation: 5,000–9,616 feet
Designation: White Pine County Conservation, Recreation and Development Act (2006)

Area Description

The South Egan Range Wilderness Area is a striking and rugged mountain spine running nearly the entire length of the White River Valley. Spectacular vistas give a sense of exhilaration as the landscape falls away dramatically to the valley floor, 4,000 feet below. Numerous riparian areas and pockets of quaking aspen serve to attract an abundant variety of wildlife species which include mule deer, elk, and a variety of upland game birds, such as sage grouse.

There are three routes (cherrystems) that provide access to the ridgeline toward the center of the wilderness area. The West Parker Spring route (not suitable for full-sized vehicles) leads to the ridge and provides views of Mt. Wheeler to the east and over a number of mountain ranges to the west. Several springs feed small, intermittent creeks throughout the wilderness area. Recreational opportunities include camping, hiking, backpacking, horseback riding, and hunting. Solitude can be found in any of the many small drainages and washes that run down from the ridgeline. A variety of trees also provide excellent cover throughout the range.

Far South Egans Wilderness

Size: 36,384 acres
Elevation: 5,800–9,823 feet
Designation: Lincoln County Conservation, Recreation and Development Act (2004)

Area Description

The Far South Egans Wilderness consists primarily of an extremely rugged portion of the Egan Range. The west side of the range is characterized by spectacularly rugged limestone cliffs with multicolored strata. The Egan Range dramatically ascends 4,500 feet from the valley floor to form the spectacular limestone cliffs of the Far South Egan Range Wilderness Area.

The area includes an unusual and scenic mix of ponderosa and bristlecone pine forest. Large stands of ponderosa exist at higher elevations (7,000 feet and above). The east side of the Egan Range is less rugged and supports a dense cover of woodlands, principally pinyon pine and juniper. Mule deer, elk, bighorn sheep, mountain lions, golden eagles, and ferruginous hawks are among the numerous wildlife species found in the mountains of the Far South Egans Wilderness. Whipple Cave lies in the northwestern portion of the wilderness area. Following a 70 foot decent, you are provided with 1,000 feet of known passages.

Other features of the Far South Egans Wilderness Area include an abandoned historic sawmill and a shingle mill. The shingle mill was in production around the early 1900's. Shingles were likely produced for the newly settled town of Lund, NV. Logging of ponderosa pine trees occured around the turn of the 20th century.

Fortification Range Wilderness

Size: 30,656 acres
Elevation: 6,150–8,268 feet
Designation: Lincoln County Conservation, Recreation and Development Act (2004)

Area Description

The 14 mile long Fortification Range is a low mountain range composed largely of volcanic materials (tuffs and tuffaceous breccia). Most of the range is comprised of gentle ridges, however, the north end, where the wilderness area lies, becomes very rugged and precipitous (elevations over 8,000 feet) where the rock has been eroded into sheer cliffs and massive outcrops. These spectacular formations and cliffs, for which the range was named, form a huge natural amphitheater at the head of the Cottonwood Canyon drainage. Scattered ponderosa pine, pinyon pine, juniper, aspen, and cottonwood are found in the northern portion of the area while the southern portion of the unit is densely forested by pinyon and juniper. Wildlife within the wilderness includes mule deer, elk, antelope, mountain lions, and raptors.

Outstanding opportunities for primitive recreation exist within the Fortification Range Wilderness including hiking, camping, backpacking, photography, nature study, horseback riding, and hunting. Opportunities for observing the geology are abundant with multi-hued pink sculpted rock formations, and dazzling white spires only a short hike from the northeastern boundary. The wilderness area provides excellent opportunities for solitude along the forested slopes, or in one of the canyons along the eastern side of the range.

This project is in conformance with the BLM Manual 8560 — Management of Designated Wilderness Areas, which states:

> Wildfire or prescribed burning may be used as a wildlife management tool if carefully designed to maintain or enhance the wilderness resource. Wildfire or prescribed burning is used only when the project can be accomplished without serious or long-lasting damage to watershed or the area's wilderness character. Prescribed burning will not be permitted to improve wildlife utilization. It may be done only for the following purpose(s): It is needed to maintain the natural condition of a fire-dependent ecosystem or to re-introduce fire where past strict wildfire control measures have interfered with natural ecological processes.

The FRCC for the two watersheds (Cave Valley & Lake Valley), as a whole is 35% in FRCC 3. The following table shows the FRCC for each wilderness as a whole (including portions not within the two watersheds). The Mt. Grafton Wilderness shows this highest percentage of departure or the highest percentage in class 3. For only the portions of the four wildernesses within the watersheds, they are highly departed (49% in FRCC 3). With FRCC 2 or 3, there is an increased risk of losing key ecosystems, whereas FRCC 1 is within the natural range of variability.

Wilderness	FRCC by Percent		
	1	2	3
Far South Egan	24	46	30
Fortification	40	19	41
Mount Grafton	13	36	51
South Egan	18	66	16
Portions of 4 wilderness within 2 watersheds	12	39	49

From the fire database (1974-2010), within wilderness within the two watersheds there were 66 fires documented. Of the 66:

- 61 < 10 acres
- 5 > 10 acres.

As a result, the average fire size is 101 acres per year.

Of the 66, only ten fires were wildland fire for resource benefit (2003-2010):

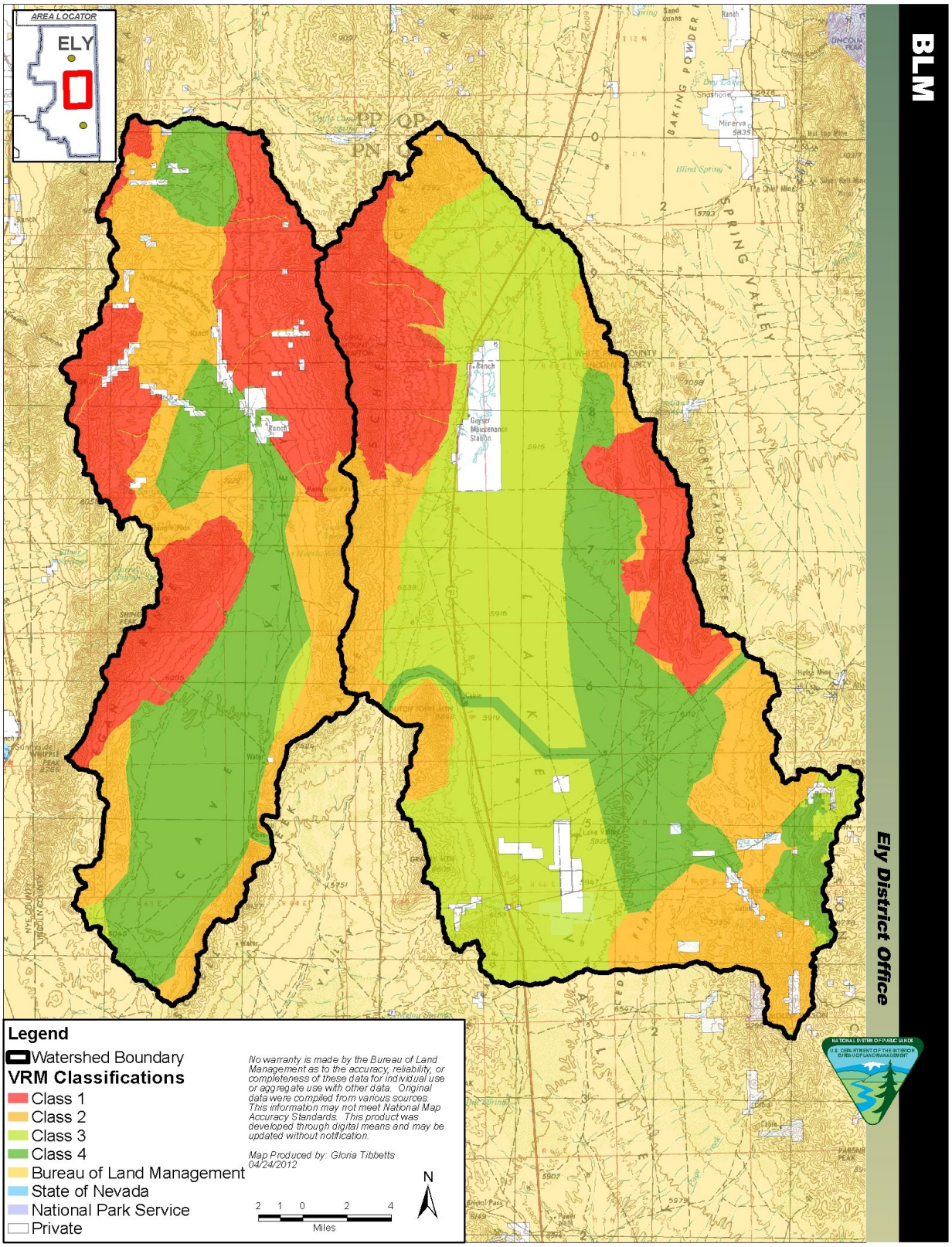
- 8 were small fires, ~ 1 tree
- 2 were large fires, with a combined total of 2,579 acres.

Therefore, 56 of the fires were actively suppressed. Action is not necessary to persevere any of the four wilderness characteristics, with the exception of the natural quality. This proposal is considering restoring natural vegetation composition by reintroducing management-ignited fire as a step toward restoring natural fire regimes. These actions have the potential to diminish the untrammeled and natural qualities of wilderness in the short term, though they are intended to restore natural conditions over the long term, thereby preserving wilderness character. The combination of highly departed FRCC and the historic fire suppression in these wildernesses illustrates the need for action in wilderness.

3.12. Visual Resources

Visual resources are identified through a visual resource inventory consisting of a scenic quality evaluation, sensitivity level analysis and a delineation of distance zones. Based on these factors, BLM-administered lands are placed into four visual resource management (VRM) classes: VRM Class I, II, III and IV. Classes I and II are the most valued, Class III represents a moderate value and Class IV is of the least value. VRM classes serve two purposes: (1) as an inventory tool that portrays the relative value of visual resources in the area, and (2) as a management tool that provides an objective for managing visual resources.

The project area occurs within all four VRM classes as shown on Map 3.4, “Visual Resource Management (VRM) classes in the Cave Valley and Lake Valley Watersheds” (p. 90). The Cave Valley Watershed is 34% Class I, 29% Class II, 1% Class III and 36% Class IV. The Lake Valley Watershed is 15% Class I, 22% Class II, 43% Class III and 20% Class IV.



Map 3.4. Visual Resource Management (VRM) classes in the Cave Valley and Lake Valley Watersheds

The VRM Class I objective is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.

The VRM Class II objective is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract attention of the 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.

The VRM Class III objective is to 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 features 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.

The VRM Class IV objective is to allow for management activities that involve major modification of the existing character of the landscape. The level of contrast can be high – dominating the landscape and the 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 of the characteristic landscape.

The project area consists of typical basin and range topography. The major landforms in the area include mountain ranges running in a generally north-south direction, interrupted by wide valleys running in the same direction. The area is substantially natural in character though several roads, ranches, powerlines and fencelines are present. A portion of the Silverstate OHV Trail is in the project area, and the Patterson Pass Trailhead.

Vegetation is typical of that found in the Great Basin ecoregion, with sagebrush and grasses on the lower slopes creating a light grey-green color that transitions into the dark grey-green of the pinyon pine and juniper woodlands upslope. Further uphill, the woodlands give way to lighter shades of grey-green, with other vegetation (e.g. pine, spruce, fir) and more rock outcroppings along the ridges. Predominant natural features of the characteristic landscape are mosaic burned and disturbed patches within the landscape resulting from a historic fire regime of generally 35 to 100 years.

3.13. Fuels and Fire Management

3.13.1. Fuels

Fuel types within the Cave Valley and Lake Valley Watersheds represent a broad range of vegetation from high elevation limber and bristlecone pine to salt desert scrub. Presently, fire suppression within the project area has led to an alteration of fire cycles, leading to an increase in fuel build up and continuity of fuels, causing an increase in the potential for large uncontrollable fires.

Biophysical setting (BPS) models describe the vegetation, geography, biophysical characteristics, succession stages, disturbance regimes and assumptions for each vegetation type (Havlina et al,

2010). For each BPS model, reference conditions have been developed to describe the distribution of seral stages within a landscape prior to European influence. Seral classes represent a scale of vegetative succession as a community progresses from post-replacement to later successional states.

BPS models were utilized within the Ely RMP, which lists vegetation types and a desired future condition expressed as percentages of seral classes. The RMP has grouped some BPS models such as sagebrush, which incorporates all of the sagebrush systems.

Fire Regime Condition Class (FRCC) ratings are based on the comparison of the current seral states of the vegetation as compared to the reference condition on a large scale. The appropriate scale to calculate stratum FRCC ratings, as presented within the Interagency FRCC Guidebook (2010), is dictated by the fire regimes present as shown in Table 3.5, "Fire regime as described by frequency and severity as well as FRCC assessment size and the relative percentage of the Cave Valley and Lake Valley Watersheds" (p. 92).

Table 3.5. Fire regime as described by frequency and severity as well as FRCC assessment size and the relative percentage of the Cave Valley and Lake Valley Watersheds

Fire Regime Group	Fire Frequency (years)	Fire Severity	FRCC Assessment Area Size (acres)	Percent of Watersheds
I	0-35	Low/mixed	500-5,000	2
II	0-35	Replacement	500-10,000	0
III	35-200	Mixed/low	5,000-20,000	43
IV	35-200	Replacement	20,000-500,000	40
V	200+	Any Severity	1,000-20,000	15

Fire Regime Condition Class 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 No Fire Effects (<5% replacement), Low (6-25% 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 (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:

● FRCC 1 – Less than 33% departure from the central tendency of the historical range of variation (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.

FRCC ratings for the Cave Valley and Lake Valley Watersheds have been calculated utilizing the BPS data collected and ground-truthed by The Nature Conservancy. Current FRCC ratings for the Cave Valley and Lake Valley Watersheds demonstrate a departure of 58% and an FRCC 2 classification. Stratum FRCC ratings for the major BPS models present are provided in Appendix C, *Departure Matrix* (p. 221).

Vegetation treatments conducted within the Cave Valley and Lake Valley Watersheds total approximately 68,397 acres with 3,537 of these acres being treated in the last ten years. Treatment methods have included prescribed burning, mowing, herbicide and mechanical pinyon pine and juniper removal.

3.13.2. Fire Management

Historical fire occurrence within the watersheds since 1980 has included 352 fires for a total of 17,351 acres. Fire size ranged from less than 1/10th of an acre to 5,000 acres with an average of 49 acres. Fire size has been limited historically with the aggressive suppression and relative accessibility of fires within the project area. Since 2001 there have been approximately 24 wildland fires for resource benefit within the watersheds. The majority of these fires were less than an acre in size, except for the Sheep Creek fire which was approximately 2,500 acres.

Current fire management is guided by the Ely District Fire Management Plan (FMP) (2004). The FMP is divided into 25 different Fire Management Units (FMUs). Each of these FMUs is assigned a classification or type that defines the primary resource management objective, fire protection values and fire size constraints. The Cave Valley and Lake Valley Watersheds occur within five FMUs (See Table 3.6, "FMU type, percent of watershed, and fire constraint size" (p. 93) and Map 2.1, "Fire for Resource Benefit Areas in Cave Valley and Lake Valley Watersheds" (p. 33)).

Table 3.6. FMU type, percent of watershed, and fire constraint size

Fire Management Unit	Percent of Watershed	FMU Type	Fire Size Constraint*
Bullwhack	20	High Value Habitat	Moderate – 300 acres
Southern Benches - Veg	26	Vegetation	High – 50 acres
Northern Valleys	7	Vegetation	High – 50 acres
Southern Benches - HVH	3	High Value Habitat	High – 50 acres
Highland & South Egan Range	31	High Value Habitat	Low – 1,000 acres

*90 percent of the time. Deviation from the acre target would be allowed

Treatment acres are listed within the FMP and are listed below in Table 3.7, "Fire and treatment limitations listed within the Fire Management Plan" (p. 94). Wildland fire for resource benefit and prescribed fire are approved within all FMUs except the Northern Valleys FMU. Over the last ten years, 3,525 acres of non-fire treatments within the Cave Valley and Lake Valley portion of the FMUs have been completed: Bullwhack FMU – 1,516 acres, Southern Benches Veg – 230 acres, Northern Valleys – 968 acres, Southern Benches HVH – 147 acres, and Highland & South Egan Range – 664 acres.

Table 3.7. Fire and treatment limitations listed within the Fire Management Plan

Fire Management Unit Name	Wildland Fire		Wildland Fire for Resource Benefit		Non Fire Treatments		Prescribed Fire Treatments	
	Individual Fire Limitation (acres)	Decadal Tolerance (acres)	Individual Fire Target Acreage	Decadal Acres	Annual Acre Target	Decadal Acres	Annual Acre Target	Decadal Acres
Bullwack	300*	10,000	5,000	10,000	1,419	50,000	2,500	25,000
S. Benches Veg	50*	25,000	5,000	50,000	25,000	250,000	15,000	150,000
N. Valleys	50*	1,000	0	0	25,000	250,000	2,500	10,000
S. Benches HVH	50*	5,000	10,000	50,000	10,000	100,000	10,000	50,000
Highland & South Egan Range	1,000*	50,000	50,000	100,000	1,000	20,000	25,000	100,000

3.14. Climate Change

According to the Global Climate Change Impacts in the United States report produced by the U.S. Global Change Research Program, the Cave Valley and Lake Valley Watersheds are located in the Southwest region of the United States. The report states that recent warming has occurred in this region more rapidly than in other areas of the nation. The warmer temperatures and drier conditions that are being observed in some areas of the Southwest are predicted to potentially alter the vegetative distribution across the region, including possible increases in invasive species. The increased temperatures are also predicted to support increased wildfire activity.

Chapter 4. Environmental Effects:

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4.1. Air Quality

4.1.1. Impacts from Alternative A: Proposed Action and Alternative B: Reduced Ground Disturbance

The prescribed fire component would introduce fine and coarse particulates into the atmosphere within Cave Valley and Lake Valley Watersheds and White Pine and Lincoln Counties, Nevada. The BLM would follow the State of Nevada, Division of Environmental Protection, Bureau of Air Quality Planning, Smoke Management Plan requirements for air quality as indicated in Section 2.3.1.11, "Air Quality Restrictions" (p. 22). Any particulates liberated to the air during prescribed fire operations would not affect the overall air quality of White Pine or Lincoln County. The use of the herbicide Tebuthiuron would not impact air quality as the pellet-form of Tebuthiuron would be used. In pellet form there is immeasurable loss of chemical to the atmosphere.

4.1.2. Impacts from Alternative C: No Action

There would be no impacts on air quality from the No Action Alternative.

4.2. Soil Resources

4.2.1. Impacts from Alternative A: Proposed Action

Chaining and Mastication: Chaining and mastication would disturb soils by directly compacting and displacing surface and subsurface horizons, which could lead to an increased risk of wind and water erosion. Chaining operations would have the greatest risk of compacting soils within the area directly under heavy equipment. The use of heavy equipment potentially involves multiple passes across treatment areas, up-rooting vegetation, exposing soil to depths potentially below the rooting zone, and displacing soil by altering its position within the soil horizon or upon the landscape. The degree to which soils are compacted is a function of the depth of organic material and vegetation at the surface upon which the vehicles travel and the pressure the equipment exerts on the soil surface. The degree to which soil is exposed or uncovered is a function of the type of chain employed and whether one pass or two passes are employed. Displaced and exposed soil could be susceptible to wind or water erosion until exposed soil is re-vegetated. Soils compacted during chaining could show long-term effects, such as a change in soil structure and slower water infiltration rates. The amount of soil compaction in any treatment unit is expected to be small given the occurrence only appears where the equipment was used, which accounts for an overall small percentage of a treatment unit.

Mastication treatments would have compaction and displacement effects to an overall lesser degree than the chaining treatments due to use of lighter equipment and a greater retention of standing vegetation and residual organic material. Moving and stacking of biomass, whether for burning or fuelwood disposal, could lead to limited and localized areas of soil displacement, especially where the equipment may make frequent turns and where soils may become dished-out. The compaction effects would be lessened further as equipment use occurs over tree and shrub material and may not occur at all if material is thick enough to support the equipment and disperse

the ground pressure effects. Soil disturbance effects are expected to be short-term until vegetation re-establishes on bare soils.

Fire, whether unit burning post-chaining, pile burning post-mastication, or hand cutting could leave areas of soil hydrophobicity if fires burn too severely. Large slash piles may exhibit small areas of hydrophobic soil underneath and adjacent to the piles due to high temperatures generated while burning. Sites exhibiting hydrophobic characteristics are expected to be rare and to account for very minimal land area in treatment units which are burned as a secondary treatment. General conditions needed to form hydrophobic soils are a thick litter layer before the fire, sandy texture soils, and a severe slow-moving fire usually with a crown fire. Conditions in the proposed treatment units are coarse loam soils, no crown fire potential, and lack a thick organic layer component in the soil horizon.

Mechanical Methods: The three types of equipment used for mechanical sagebrush restoration require being pulled or dragged by either a tractor or bulldozer. Soil compaction is a risk, especially if the mechanical method is a secondary treatment following a chaining primary treatment. The Dixie harrow and mower operations would have a lower risk of soil compaction whether directly or compounded following a chaining operation. The probable use of a rubber tired tractor with the harrow or mower reduces the likelihood of soil effects. Roller chopper use would be expected to have the greater risk of soil compaction with the use of a bulldozer to pull the equipment across treatment units.

Dixie harrow would rake the surface vegetation and potentially the soil surface to the set depth of the spiked teeth. Further soil disturbance could occur if dragged material gouged or scoured bare or exposed soil. Mower use is not expected to affect soil resources. Roller chopper use could directly scalp the soil surface if the chopper was operated over bare or exposed soils. Mechanical methods could have long-term disturbance effects to soil resources if operated upon bare or exposed soil. Displacement of surface organic horizon or intermixing of inorganic subsurface horizons with organic surface horizons may affect soil productivity in localized areas.

Chemical Treatment: Use of chemicals to affect vegetation would not directly affect soils. Loss of ground cover vegetation may affect soil retention or soil stability. It is expected that the efficacy of chemical treatments across landscape settings would not lead to increased potential for soil erosion or soil loss. Chemical treatment of target species would leave sufficient ground cover from non-target vegetation to retain soil resources.

Prescribed Fire: Burning treatment units to reduce fuel loading or biomass and to attain other resource targets would follow guidelines in an established project-specific burn plan that would be developed at the time of implementation. The use of control lines and fire lines would necessitate the exposure of bare mineral soil. Lines could be areas of increased risk to soil erosion if rehabilitation does not occur prior to the onset of the first precipitation event. Loss of target vegetation from prescribed burning is not expected to result in a total elimination of organic texture from hillsides or the ability of the natural system to buffer sediment if erosion does occur. Understory vegetation and heterogeneous topography are expected to naturally buffer and protect hillsides from soil and water movement prior to the establishment of new or release of existing plants.

Risk of creating hydrophobic soil conditions is identical to that described for use of fire as a secondary treatment in Chaining and Mastication.

Aspen Restoration: Manual conifer tree cutting and removal would not affect soil resources directly. Decking trees on riparian soils and later fuelwood cutting if undertaken during wet soil conditions could be a risk factor. Prescribed fire use in aspen stands would have effects similar, but typically on a smaller scale, to those described in Prescribed Fire.

Seeding: Use of seeding as a treatment would tend to stabilize and protect soils, especially where sown on bare or exposed soil. Establishing target species ground cover is expected to hold soil on slopes and buffer against erosion as well as working as an important part of soil health by organic matter integration.

Fencing: Use of fence would not directly affect soil resources. Fencing areas to exclude entry into sensitive areas could protect soils from trampling until target vegetation is established and capable of handling intended use.

Biological Soil Crust (BSC) occurs within both watersheds but has not been inventoried. Ground disturbing activities are planned for approximately 147,333 acres, or 25 percent of the total project area, over the life of the plan and have the potential to disrupt BSC.

4.2.2. Impacts from Alternative B: Reduced Ground Disturbance

Prescribed Fire: Burning treatment units to reduce fuel loading or biomass and to attain other resource targets would follow guidelines in an established project-specific burn plan that would be developed at the time of implementation. The use of control lines and fire lines would necessitate the exposure of bare mineral soil. Lines could be areas of increased risk to soil erosion if rehabilitation does not occur prior to the onset of the first precipitation event. Loss of target vegetation from prescribed burning is not expected to result in a total elimination of organic texture from hillsides or the ability of the natural system to buffer sediment if erosion does occur. Understory vegetation and heterogeneous topography are expected to naturally buffer and protect hillsides from soil and water movement prior to the establishment of new or release of existing plants.

Risk of creating hydrophobic soil conditions is identical to that described for use of fire as a secondary treatment in Chaining and Mastication as described in Section 4.2.1, “Impacts from Alternative A: Proposed Action” (p. 97).

Aspen Restoration: Manual conifer tree cutting and removal would not affect soil resources directly. Decking trees on riparian soils and later fuelwood cutting if undertaken during wet soil conditions could be a risk factor. Prescribed fire use in aspen stands would have effects similar, but typically on a smaller scale, to those described in Prescribed Fire.

Seeding: Use of seeding as a treatment would tend to stabilize and protect soils, especially where sown on bare or exposed soil. Establishing target species ground cover is expected to hold soil on slopes and buffer against erosion as well as working as an important part of soil health by organic matter integration.

Fencing: Use of fence would not directly affect soil resources. Fencing areas to exclude entry into sensitive areas could protect soils from trampling until target vegetation is established and capable of handling intended use.

Biological Soil Crust (BSC) occurs within both watersheds but has not been inventoried. Ground disturbing activities are planned for approximately 147,333 acres, or 25 percent of the total project area, over the life of the plan and have the potential to disrupt BSC.

4.2.3. Impacts from Alternative C: No Action

There would be no short-term effects to soil resources. There could be a long-term effect to soil productivity from the slow change from shrub-grassland dominated systems to shrub-tree dominated systems. In other words, there could be a change in the timing and processes involved in the way nutrients and organic matter enter the soils; finer vegetation potentially changing to coarser vegetation or shorter nutrient cycling times versus potentially longer times.

4.3. Wetlands and Riparian Zones

4.3.1. Impacts from Alternative A: Proposed Action and Alternative B: Reduced Ground Disturbance

Project design and targets for individual treatment units intend to avoid riparian systems. It is believed that primary and adaptive management actions for sagebrush restoration and woodland treatments would not affect riparian areas. Avoidance, buffering, and other design feature implementation would minimize effects to riparian systems.

Tebuthiuron would not impact riparian areas, as a buffer zone of non-treatment would be included near riparian areas. Adherence 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 would ensure no impacts to riparian and spring sources.

Aspen treatments would be assessed as individual projects prior to implementation and mitigation measures and design features developed and adopted to protect riparian resources as conditions warrant on a case by case basis. It is expected that effects to riparian resources other than aspen vegetation would be minimized.

4.3.2. Impacts from Alternative C: No Action

There would be no effects to wetlands or riparian areas as a result of the No Action Alternative.

4.4. Vegetation

4.4.1. Rangeland Vegetation

4.4.1.1. Impacts from Alternative A: Proposed Action

The Sagebrush Restoration and Combination Restoration Treatment Units of the proposed action address the invasion and/or expansion of pinyon pine and juniper species and diminishing herbaceous cover in sagebrush vegetation found in the watersheds. These treatments will remove

pinyon pine and juniper vegetation from sagebrush plant communities and/or reduce shrub cover to allow for increased herbaceous growth. Over the long term, this would move the watersheds toward the desired range of conditions for rangeland vegetation, as stated in the Ely RMP, FRCC objective for the watersheds, and Standards for Rangeland Health. There would be some short term loss of rangeland vegetation from project implementation. Long term management of crested wheatgrass seedings will also allow for these areas to persist as both a wildlife habitat source and important livestock forage.

Range Improvement projects included in the proposed action would temporarily displace rangeland vegetation during construction, however the project areas will revegetate naturally resulting in minimal overall effect to the vegetation of the areas.

Improved livestock distribution, as a result of new stockwater development, will affect vegetation by adding new areas of grazing pressure while reducing grazing pressure in areas currently experiencing higher grazing intensity. This will result in localized areas of increased vegetative disturbance. These effects will be localized and minimal in the overall scope of this plan.

4.4.1.2. Impacts from Alternative B: Reduced Ground Disturbance

The effects of Alternative B would be similar to those described under the proposed action. The extent of the restoration treatments in rangeland vegetation would be limited to a smaller area. These treatments would move towards, but not likely achieve, desired range of conditions.

Range improvements would still occur, but would be limited to previously disturbed areas. The extent of effects to rangeland vegetation would be limited to a smaller number of disturbances generally in current or past disturbance areas.

4.4.1.3. Impacts from Alternative C: No Action

Under the No Action Alternative, the current rangeland vegetative conditions would persist and likely continue on a long-term trend of increased pinyon pine and juniper and decreased herbaceous understory.

4.4.2. Forest and Woodland Vegetation

4.4.2.1. Impacts from Alternative A: Proposed Action

The following treatment methods have the potential to impact forests and/or woodlands. Other treatment methods would have no impact because they occur outside forest or woodland areas.

Chaining: Pinyon pine and juniper woodlands are incidental vegetation types for chaining. Chaining removes all pinyon pine and juniper trees over approximately four feet in height within the chaining treatment area, except for islands and stringers left by design. This treatment method is not mimicking a natural disturbance as prescribed fire or individual tree removal methods do, but does effectively revert succession class C, D, E and UN (for uncharacteristically high canopy cover) woodlands back to succession class A and B woodlands. Currently in the watershed, succession classes A and B are underrepresented by 5% each. Thus some chaining in pinyon pine and juniper woodlands would have an impact consistent with the purpose and need of the proposal. However, if more than 15% of the pinyon pine and juniper woodlands are

treated through chaining, herbicide or stand-replacing prescribed or wild fire, then the ecological departure of the pinyon pine and juniper woodland system would increase contrary to the purpose and need for treatment. Regeneration following chaining is typically quite successful, however young pinyon pine and juniper trees would be at increased risk of being trampled, browsed, scrapped or otherwise disturbed due to the increased amount of livestock grazing that would occur after understory vegetative objectives are met.

Individual tree removal: Individual tree removal includes hand cutting, mastication and mechanical tree removal treatment techniques. Target and incidental vegetation for these treatment methods include pinyon pine and juniper woodlands, white fir forests, and aspen forests. The impact to these vegetation types from the proposed action is to reduce tree density in targeted stands. This reduction of tree density would open up stands (converting a succession class UN (for uncharacteristically high canopy cover) stand in many cases to a C, D or E stand depending on the average size of the remaining trees). This impact would be consistent with the goals of the project in all forest and woodland vegetation types because all vegetation types are either becoming encroached by an unwanted species (white fir in aspen or pinyon pine and juniper in ponderosa) or are over-representing in the later successional classes, or both.

Chemical Treatments: Herbicide (Tebuthiuron) has varying impacts on woodland vegetation. If applied at a high enough rate (more than 1.5 oz. of active ingredient per acre), nearly all trees would senesce. At lesser rates, pinyon pine is more vulnerable than juniper and juniper will often survive. If the rate is high enough to kill all trees in the application area, the effect would be to return the area to a succession class A if in large enough blocks. If the application is mosaic in nature, the result could be to open up the stand, creating class C or D structures. Both of these results are consistent with the purpose and need, so long as more acreage isn't converted to one succession class than is stated in the reference condition percentage, which would increase rather than decrease ecological departure.

Prescribed Fire and Fire for Resource Benefit: Prescribed fire reduces the density of trees generally in a mosaic pattern and increases regeneration in some ecosystems (especially aspen and mountain mahogany). Because every forest and woodland community within the Cave Valley and Lake Valley Watersheds is over-dense and over-representing in the late successional age classes, the reduction of tree density and increased regeneration would return the stands to a condition closer to the reference condition and therefore reduce ecological departure. Prescribed fire also burns very heterogeneously across the burn unit, allowing for a more natural distribution of age classes and increased patchiness in the watershed. This impact is consistent with the purpose and need for the proposal.

Fencing: Fencing would reduce the amount of herbivory by livestock and wildlife and would allow for increased rates of regeneration in aspen communities. This increased regeneration would help ensure the aspen stands persist into the future and reduce the ecological departure of the system.

Range Improvements: The range improvements included in the Proposed Action are not anticipated to impact forest and woodland vegetation due to the distance between any proposed projects and identified woodland areas.

4.4.2.2. Impacts from Alternative B: Reduced Ground Disturbance

The following treatment methods have the potential to impact forests and/or woodlands. Other treatment methods would have no impact because they occur outside forest or woodland areas.

Individual tree removal: Individual tree removal includes only hand cutting under this alternative. Target and incidental vegetation for this treatment method includes pinyon pine and juniper woodlands, white fir forests, and aspen forests. The impact to these vegetation types from Alternative B is to reduce tree density in targeted stands. This reduction of tree density would open up stands (converting a succession class UN (for uncharacteristically high canopy cover) stand in many cases to a C, D or E stand depending on the average size of the remaining trees). This impact would be consistent with the goals of the project in all forest and woodland vegetation types because all vegetation types are either becoming encroached by an unwanted species (white fir in aspen or pinyon pine and juniper in ponderosa) or are over-representing in the later successional classes, or both.

Prescribed Fire and Fire for Resource Benefit: Prescribed fire reduces densities of trees generally in a mosaic pattern, and increases regeneration in some ecosystems (especially aspen and mountain mahogany). Because every forest and woodland community within the Cave and Lake Watersheds is over-dense and over-representing in the late successional age classes, the reduction of tree density and increased regeneration would return the stands to a condition closer to the reference condition and therefore reduce ecological departure. Prescribed fire also burns very heterogeneously across the burn unit, allowing for a more natural distribution of age classes and increased patchiness in the watershed. This impact is consistent with the purpose and need for the proposal.

Fencing: Fencing would reduce the amount of herbivory by livestock and wildlife and would allow for increased rates of regeneration in aspen communities. This increased regeneration would help ensure the aspen stands persist into the future and reduce the ecological departure of the system.

Range Improvements: The range improvements included in Alternative B are not anticipated to impact forest and woodland vegetation due to the distance between any proposed projects and identified woodland areas.

4.4.2.3. Impacts from Alternative C: No Action

The No Action Alternative would not impact forests and woodlands in a manner consistent with the purpose and need. Rather, stand densities would continue to increase and stands would continue to become more departed from the reference condition (higher FRCC). Forests and woodlands would be at increased risk to high severity, high intensity wildfire that is uncharacteristic and would revert large areas back to successional class A, increasing the ecological departure in most vegetation types even more. Furthermore, without disturbance (either natural or through treatment such as one described in the Proposed Action) aspen stands within the watershed are at high risk to being lost from the landscape forever.

4.4.3. Special Status Plant Species

4.4.3.1. Impacts from Alternative A: Proposed Action and Alternative B: Reduced Ground Disturbance

There are no proposed vegetation treatments or range improvements occurring within the known populations of Parish phacelia or the long-calyx eggvetch and therefore populations would remain unchanged.

4.4.3.2. Impacts from the Alternative C: No Action

Under the No Action Alternative, Parish phacelia and long-calyx eggvetch populations would remain unchanged.

4.4.4. Non-native Invasive and Noxious Species

4.4.4.1. Impacts from Alternative A: Proposed Action

Treatments could potentially spread noxious and invasive weeds. Cheatgrass is the most likely weed species to infest treatment units. However, by using cheatgrass suppression options, desirable species should establish. The several range improvement projects proposed could disturb existing vegetation and weeds could spread into the newly disturbed areas. This increase in weeds is expected to be minimal. Reseeding these areas with desired plant species should prevent weeds from becoming a dense cover. At the time of implementation, site specific weed risk assessments would provide best management practices to prevent these issues (required under Section 2.3.1.12, "Non-native Invasive and Noxious Species Restrictions" (p. 22)).

4.4.4.2. Impacts from Alternative B: Reduced Ground Disturbance

Treatments could potentially spread noxious and invasive weeds. Using more hand cutting would reduce the risk of cheatgrass. Prescribed fire is more likely to result in cheatgrass than mowing or chaining as permitted in the Proposed Action. Several range improvement projects are also proposed in this alternative, but with no new ground disturbance. Impacts would be similar since existing vegetation would still be disturbed, but less than the Proposed Action. At the time of implementation, site specific weed risk assessments would provide best management practices to prevent these issues (required under Section 2.3.1.12, "Non-native Invasive and Noxious Species Restrictions" (p. 22)).

4.4.4.3. Impacts from Alternative C: No Action

No new weed issues would occur as a result of Alternative C. However, current weed problems would continue including higher tree and shrub densities. If disturbed by fire, these areas could result in dense cheatgrass infestations. Also, no new range improvements would impact distribution of livestock, thereby increasing impacts to desired vegetation and making it more susceptible to weed infestations.

4.5. Fish and Wildlife Resources

4.5.1. Fish and Wildlife

4.5.1.1. Impacts from Alternative A: Proposed Action

Vegetation Treatments and Seeding Management Plan: Impacts to big game and other wildlife would be minimal with implementation of timing stipulations and design features. Individual animals may be disturbed and displaced from the area temporarily during implementation of vegetation treatments; however there is adjacent suitable habitat to provide wildlife needs. A mosaic pattern is expected to provide wildlife populations with greater vegetative diversity and diverse age-class distribution. Treatments would release understory forage and browse species for all wildlife, improving overall nutrition, productivity, and survivorship. Woodland sites would continue to provide thermal protection and escape cover for many species.

Removal of Abandoned Telephone Poles and Line: Under the Proposed Action, wildlife may be temporarily disturbed or displaced due to cross-country travel and disturbance from pole and line removal. Removing abandoned telephone poles will benefit wildlife, particularly small mammals and reptiles, by removing potential raptor perch sites and reducing predation.

Dump Site Reclamation: Under the Proposed Action, wildlife may be temporarily disturbed or displaced due to cross-country vehicular travel and dump site clean-up. Removing debris and rehabilitation of areas will promote native revegetation of disturbed areas improving habitat for wildlife.

4.5.1.2. Impacts from Alternative B: Reduced Ground Disturbance

Vegetation Treatments and Seeding Management Plan: Impacts to big game and other wildlife would be minimal with implementation of timing stipulations and design features. Individual animals may be disturbed and displaced from the area temporarily during implementation of vegetation treatments; however there is adjacent suitable habitat to provide wildlife needs. A mosaic pattern is expected to provide wildlife populations with greater vegetative diversity and diverse age-class distribution. Treatments would release understory forage and browse species for all wildlife improving overall nutrition, productivity, and survivorship. Woodland sites would continue to provide thermal protection and escape cover for many species.

The Reduced Ground Disturbance Alternative only includes hand cutting, prescribed fire, seeding and fencing in non-wilderness areas and wildland fire for resource benefit in wilderness areas. While these treatments would potentially cause fewer disturbances to wildlife due to less heavy machinery, noise and overall ground disturbance, decadent and even-aged sagebrush stands would potentially go untreated and there would be no improvement of the herbaceous understory for wildlife forage. Additionally, because secondary treatments such as seeding will not occur in wilderness areas, these areas may not meet desired vegetative objectives and there may potentially be a long term loss of wildlife habitat.

Removal of Abandoned Telephone Poles and Line and Dump Site Reclamation: Wildlife impacts under the Reduced Ground Disturbance Alternative would be the same as the Proposed Action.

4.5.1.3. Impacts from Alternative C: No Action

Vegetation Treatments and Seeding Management Plan: Under the No Action Alternative, resource conditions are expected to stay the same with continual pinyon pine and juniper encroachment on sagebrush communities and decline in the production, vigor, and diversity of grass, forb, and shrub species. Forage values would continue to decline in terms of both nutrition and palatability. The increase of pinyon pine, juniper, and decadent sagebrush stands could result in large, uncontrolled wildfires that have the potential to eliminate large tracts of existing habitat for big game and other wildlife.

Range Improvements: Under the No Action Alternative, there would be no additional disturbance to wildlife because no new pipelines and troughs, reservoirs, or well developments would be constructed. However, there would be continual concentrated use at the current functioning water troughs and reservoirs, continuing and expanding the degradation in these areas with little to no native vegetation and increased weeds, altering habitat. Additionally, because old fences will not be replaced with BLM wildlife compliance fences, big game (particularly pronghorn antelope) will continue to be inhibited and have restricted movement within the watershed.

Removal of Abandoned Telephone Poles and Line: Under the No Action Alternative, abandoned telephone poles and line will not be removed and wildlife would not be temporarily disturbed or displaced due to cross-country travel and disturbance from pole and line removal. Raptor perches will continue to be present and predation on small mammals and reptiles will remain unchanged.

Dump Site Reclamation: Under the No Action Alternative, dump sites and non-historic debris may still be removed through separate actions that would be determined on a case by case basis. Wildlife would not be disturbed or displaced from cross-country vehicular travel and dump site clean-up as a direct result of this action.

4.5.2. Migratory Birds and Raptors

4.5.2.1. Impacts from Alternative A: Proposed Action

Vegetation Treatments and Seeding Management Plan: Under the Proposed Action, impacts to migratory birds and raptors would be minimal due to timing restrictions and design features. Treatment implementation would occur outside the breeding bird nesting season or the area would be surveyed for nesting birds prior to treatment. Due to the difficulty of identifying all nests within a project area, some nests or eggs may be destroyed during implementation; however due to adjacent and available suitable habitat within the watershed, local migratory bird populations would not be impacted by the Proposed Action. All active raptor nests would be avoided during implementation of the Proposed Action.

Changes in habitat condition and abundance as a result of the Proposed Action may result in increases in the populations of some bird species at the expense of other bird species. Thus, there is no change that would benefit or adversely affect all bird species. Additionally, treatment design is to incorporate varying succession states of pinyon pine and juniper woodlands throughout the watershed and would benefit pinyon-juniper obligate bird species. Incorporating pinyon-pine and juniper stringers into the treatment design is expected to benefit nesting Ferruginous hawks.

Additionally, improving sagebrush communities would increase the prey base (small mammals) for raptors and increase insect populations for passerines.

Range Improvements: Under the Proposed Action, impacts to migratory birds and raptors would be minimal due to timing restrictions and design features. Migratory birds and raptors may be temporarily disturbed during construction of range improvements. Where possible, pipelines would follow existing roads or trails, or crush vegetation creating a temporary loss of habitat; however this will not affect migratory bird or raptor populations. All troughs will be equipped with wildlife escape ramps and will provide drinking water for birds.

Removal of Abandoned Telephone Poles and Line: Under the Proposed Action, migratory birds and raptors may be temporarily disturbed or displaced due to cross-country travel and disturbance from pole and line removal. Removing abandoned telephone poles will benefit migratory birds by removing potential raptor perch sites and reducing nest predation.

Dump Site Reclamation: Under the Proposed Action, wildlife may be temporarily disturbed or displaced due to cross-country vehicular travel and dump site clean-up. Removing debris and rehabilitation of areas will promote native revegetation of disturbed areas improving nesting and foraging habitat for migratory birds and raptors.

4.5.2.2. Impacts from Alternative B: Reduced Ground Disturbance

Vegetation Treatments and Seeding Management Plan: Under the Reduced Ground Disturbance Alternative, impacts to migratory birds and raptors would be minimal due to timing restrictions and design features. Treatment implementation would occur outside the breeding bird nesting season or the area would be surveyed for nesting birds prior to treatment. Due to the difficulty of identifying all nests within a project area, some nests or eggs may be destroyed during implementation; however due to adjacent and available suitable habitat within the watershed, local migratory bird populations would not be impacted by this alternative. All active raptor nests would be avoided during implementation of the Reduced Ground Disturbance Alternative.

Changes in habitat condition and abundance from the Reduced Ground Disturbance Alternative may result in increases in the populations of some bird species at the expense of other bird species. Thus, there is no change that would benefit or adversely affect all bird species. Additionally, treatment design is to incorporate varying succession states of pinyon pine and juniper woodlands throughout the watershed and would benefit pinyon-juniper obligate bird species. Incorporating pinyon pine and juniper stringers into the treatment design is expected to benefit nesting Ferruginous hawks. Additionally, improving sagebrush communities would increase the prey base (small mammals) for raptors and increase insect populations for passerines.

The Reduced Ground Disturbance Alternative only includes hand cutting, prescribed fire, seeding and fencing in non-wilderness areas and wildland fire for resource benefit in wilderness areas. While these treatments would potentially cause less disturbance to migratory birds and raptors due to less heavy machinery, noise and overall ground disturbance, decadent and even-aged sagebrush stands would potentially go untreated and there would be no improvement of the herbaceous understory and limited improvement of sagebrush habitat as a whole. Therefore, there would not be an increase of small mammal or insects for raptor and passerines, as well as suitable nesting habitat for sagebrush nesting birds. Additionally, because secondary treatments such as seeding will not occur in wilderness areas, these areas may not meet desired vegetative objectives and there may potentially be a long term loss of migratory bird habitat.

Range Improvements: Under the Reduced Ground Disturbance Alternative, impacts to migratory birds and raptors would be minimal due to timing restrictions and design features. There will be loss of some habitat due to well development and pipeline reconstruction; however this will not affect migratory bird or raptor populations. All troughs will be equipped with wildlife escape ramps and will provide drinking water for birds.

Removal of Abandoned Telephone Poles and Line: Under the Reduced Ground Disturbance Alternative, impacts to birds would be the same as the Proposed Action.

Dump Site Reclamation: Under the Reduced Ground Disturbance Alternative, migratory birds and raptors may be temporarily disturbed or displaced due to cross-country vehicular travel and dump site clean-up. Removing debris and rehabilitation of areas will promote native revegetation of disturbed areas improving nesting and foraging habitat.

4.5.2.3. Impacts from Alternative C: No Action

Vegetation Treatments and Seeding Management Plan: Under the No Action Alternative, resource conditions are expected to stay the same with continual pinyon pine and juniper encroachment on sagebrush communities and decline in the production, vigor, and diversity of grass, forb, and shrub species. The increase of pinyon pine, juniper, and decadent sagebrush stands could result in large, uncontrolled wildfires that have the potential to eliminate large tracts of existing habitat for migratory birds and raptors.

Range Improvements: Under the No Action alternative, no new range improvements would be constructed and there would be no disturbance to migratory birds, raptors, and their habitat.

Removal of Abandoned Telephone Poles and Line: Under the No Action Alternative, abandoned telephone poles and line will not be removed and migratory birds and raptors would not be temporarily disturbed or displaced due to cross-country travel and disturbance from pole and line removal. Raptor perches will continue to be present and predation on migratory birds and nests will remain unchanged.

Dump Site Reclamation: Under the No Action Alternative, dump sites and non-historic debris may still be removed through separate actions that would be determined on a case by case basis. Wildlife would not be disturbed or displaced from cross-country vehicular travel and dump site clean-up as a direct result of this action.

4.5.3. Special Status Animal Species

4.5.3.1. Impacts from Alternative A: Proposed Action

Vegetation Treatments and Seeding Management Plan: Under the Proposed Action, impacts to Special Status Species would be minimal with implementation of Best Management Practices, timing stipulations, and design features of the treatments. Individual animals may be disturbed and displaced from the area during implementation of treatments. Tree roosting bats may be disturbed, displaced, or killed during implementation of pinyon pine, juniper, and aspen treatments, however suitable woodlands exist adjacent to treatment units and the actions would not affect local bat populations.

Treatments are expected to improve habitat for sage grouse, pygmy rabbits, bighorn sheep and other special status species by removing pinyon pine and juniper trees, increasing available sagebrush habitat, and increasing grass and forb production in sagebrush communities. Creating corridors to Silver Spring and Willow Creek Spring in Cave Valley and a corridor to Table Mountain in Lake Valley by removing pinyon pine and juniper trees will assist movement of sage grouse from breeding habitat to summer brood rearing habitat. Over time, aspen restoration treatments will create more suitable habitat for nesting northern goshawks throughout the watersheds, increasing local populations.

Range Improvements: Under the Proposed Action, impacts to special status species will be minimal with implementation of Best Management Practices and timing stipulations. There would be loss of some habitat due to well development and pipeline reconstruction; however this will not affect special status species' populations. Pygmy rabbit habitat will be avoided. New troughs will be equipped with wildlife escape ramps and provide drinking water for passerines and bats. Sage grouse fence-strike mortalities will be reduced with flagging to make fence wire more visible.

Removal of Abandoned Telephone Poles and Line: Under the Proposed Action, special status animals may be temporarily disturbed or displaced due to cross-country travel and disturbance from pole and line removal. Removing abandoned telephone poles will benefit special status species, particularly sage grouse, pygmy rabbits, and passerines, by removing potential raptor perch sites and reducing predation.

Dump Site Reclamation: Under the Proposed Action, wildlife may be temporarily disturbed or displaced due to cross-country vehicular travel and dump site clean-up. Removing debris and rehabilitation of areas will promote native revegetation of disturbed areas improving habitat for wildlife.

4.5.3.2. Impacts from Alternative B: Reduced Ground Disturbance

Vegetation Treatments and Seeding Management Plan: Under the Reduced Ground Disturbance Alternative, impacts to special status species would be minimal with implementation of Best Management Practices, timing stipulations, and design features of treatments. Individual animals may be disturbed and displaced from the area during implementation of treatments. Tree roosting bats may be disturbed, displaced, or killed during implementation of pinyon pine, juniper, and aspen treatments, however suitable woodlands exist adjacent to treatment units and the actions would not affect local bat populations.

Treatments are expected to improve habitat for sage grouse, pygmy rabbits, bighorn sheep and other special status species by removing pinyon pine and juniper trees, increasing available sagebrush habitat, and increasing grass and forb production in sagebrush communities. Creating corridors to Silver Spring and Willow Creek Spring in Cave Valley and a corridor to Table Mountain in Lake Valley by removing pinyon pine and juniper trees will assist movement of sage grouse from breeding habitat to summer brood rearing habitat. Over time, aspen restoration treatments will create more suitable habitat for nesting northern goshawks throughout the watersheds, increasing local populations.

Reduced Ground Disturbance Alternative only includes hand cutting, prescribed fire, seeding and fencing in non-wilderness areas and wildland fire for resource benefit in wilderness areas. While these treatments would potentially cause fewer disturbances to special status species due to less heavy machinery, noise and overall ground disturbance, decadent and even-aged sagebrush

stands would potentially go untreated and there would be no improvement of the herbaceous understory for wildlife forage. Additionally, because secondary treatments such as seeding will not occur in wilderness areas, these areas may not meet desired vegetative objectives and there may potentially be a long term loss of habitat for special status species.

Range Improvements: Under the Reduced Ground Disturbance Alternative, impacts to special status species would be minimal due to timing restrictions and design features. There will be loss of some habitat due to well development and pipeline reconstruction; however this will not affect special status species' populations. All troughs will be equipped with wildlife escape ramps and will provide drinking water for passerines and bats. Sage grouse fence-strike mortalities will be reduced with flagging to make fence wire more visible.

Removal of Abandoned Telephone Poles and Line and Dump Site Reclamation: Under the Reduced Ground Disturbance Alternative, impacts to special status animal species would be the same as the Proposed Action.

4.5.3.3. Impacts from Alternative C: No Action

Vegetation Treatments: Under the No Action Alternative, resource conditions are expected to stay the same with continual pinyon pine and juniper encroachment on sagebrush communities and decline in the production, vigor, and diversity of grass, forb, and shrub species. Forage values would continue to decline in terms of both nutrition and palatability. The increase of pinyon pine, juniper, and decadent sagebrush stands could result in large, uncontrolled wildfires that have the potential to eliminate large tracts of existing habitat for special status species. Additionally, the spread of pinyon pine and juniper trees on sagebrush communities potentially limits available strutting grounds, nesting and summer habitats, possibly resulting in a decline in local sage grouse populations.

Range Improvements: Under the No Action alternative, no new range improvements would be constructed and there would be no disturbance to special status species and their habitat. The conditions are expected to remain the same at Big Springs and might not provide optimal habitat for nesting and foraging bats, passerines, and raptors. Sage grouse mortalities related to fence collisions would remain the same.

Removal of Abandoned Telephone Poles and Line: Under the No Action Alternative, abandoned telephone poles and line will not be removed and special status species would not be temporarily disturbed or displaced due to cross-country travel and disturbance from pole and line removal. Raptor perches will continue to be present and predation on special status animals will remain unchanged.

Dump Site Reclamation: Under the No Action Alternative, dump sites and non-historic debris may still be removed through separate actions that would be determined on a case by case basis. Special Status Species would not be disturbed or displaced from cross-country vehicular travel and dump site clean-up as a direct result of this action.

4.6. Wild Horses and Burros

4.6.1. Impacts from Alternative A: Proposed Action and Alternative B: Reduced Ground Disturbance

Vegetation and range improvement projects that occur within the two Herd Management Areas (HMAs) would have minimal effects to wild horses. The wild horses may experience temporary displacement during implementation, but would return to the area after the project was complete. Long term impacts would benefit wild horse habitat through improved rangeland health and additional water sources.

4.6.2. Impacts from Alternative C: No Action

No impacts are expected. The existing condition of vegetation and water sources in the area would remain unchanged.

4.7. Livestock Grazing

4.7.1. Impacts from Alternative A: Proposed Action and Alternative B: Reduced Ground Disturbance

No reductions or increases in permitted livestock use are being proposed at this time.

The mandatory rest period would be for a minimum of two years or until vegetation management objectives have been met as identified in Section 2.3.1.7, “Grazing Restrictions” (p. 21). The rest period may be extended pending the rate of progress towards vegetative establishment. The rest period is necessary in order to ensure the establishment, protection, and long-term viability of the vegetation enhancement projects. The overall impacts to the grazing operations on the allotments would be minimal. Temporary fencing will facilitate these rest periods. Livestock would also be herded or otherwise controlled to avoid the treatment units while they are being rested or deferred.

The proposed range improvements would increase distribution of livestock across the landscape, potentially reducing impacts to nearby water sources by providing additional opportunities.

4.7.2. Impacts from Alternative C: No Action

Under the No Action Alternative, there would be no short term impacts to the current livestock grazing on the allotments. In the long term, forage species for livestock would continue to diminish as pinyon pine, juniper, sagebrush, and undesirable annuals increase in density and desirable grasses and forbs decline. Forage quality and quantity would decline over the long term which may result in reduction to livestock grazing permits.

4.8. Recreation

4.8.1. Impacts from the Alternative A: Proposed Action and Alternative B: Reduced Ground Disturbance

Alternatives A & B are designed to manage vegetation to a desired range and condition. Visitors would be subject to increased noise, dust, and treatment traffic from vegetation activities as the proposed treatments are implemented. Smoke and noise from prescribed burning or mechanical treatments could negatively affect the quality of the recreation experience in the short term. However, smoke from prescribed burning also occurs outside of the normal camping season, which minimizes the number of visitors subjected to this effect. The primary impact would be from fall prescribed burning that affects motorists enjoying driving for pleasure for fall color tours and hunting activities. Short term changes caused by increased treatment and prescribed fire activities in specific areas causes a shift of recreational use to other non-affected areas. This may impact other dispersed sites. Short term changes to the landscape in key areas during the life of the project may detract from the appearance and suitability of these sites to provide a quality recreation environment during the annual, concentrated high use season.

The recreation sites and patrons using them would not be subjected to working vegetative treatments during their visits, but the effect of the treatments would be evident until the vegetation in the area reestablishes. Recreation users may also notice a shift from a denser vegetation setting to a more open one as treatments are completed. There may be more vistas of previously hidden natural and man-made features such as rock outcroppings, ridge lines, homes on private land, abandoned mines, pipelines, and roads. Vegetative improvement to wildlife habitat may provide more opportunity for wildlife viewing and hunting opportunities.

The developed recreation site is normally open year round with no services and fees. It typically sees moderate use numbers until hunting season between August and November. There are low use levels for the remainder of the year at this site. Therefore, there will be impacts to the users during project activities.

4.8.2. Impacts from Alternative C: No Action

Under the No Action Alternative, no immediate direct impacts to the recreational opportunities would occur. Recreational opportunities such as hunting and wildlife viewing would be impacted in the long term due to declining habitat conditions for mule deer, elk and sage grouse. The potential exists for impacts to other recreational opportunities in the long term if a large, uncontrolled wildfire were to occur.

4.9. Lands with Wilderness Characteristics (LWCs)

4.9.1. Impacts from Alternative A: Proposed Action

The proposed vegetation treatments would impact the naturalness of the LWC units by developing human-caused disturbance on the landscape. These actions would have a trammeling effect, but over time the treatment would be unnoticeable as it blends with the surrounding landscape. There would be a short term impact to solitude while the treatment is being implemented, with

people, and machinery in some cases, working in the area. Hand-cutting and prescribed fire would pose less impact to solitude when compared with the machinery and equipment involved with the other treatments.

The hand cutting treatments (applicable to two LWC units: 39% and 20% of each unit, respectively) would pose less impact to solitude while crews are on the ground due to less noise permeating the units. Tebuthiuron for tree suppression is proposed for only a very small portion (<10%) of two LWC units. The mechanical tree removal and woodland restoration treatments are proposed for nine LWC units (44%, 20%, 20%, 15%, 11%, and the rest <10%). Prescribed fire (applies to three LWC units: 74%, 49%, 13%) would have the least impact on solitude and would appear natural to the casual observer in a shorter amount of time. Finally, the mechanical sagebrush restoration treatments are proposed on 13% of one LWC unit, which would impact naturalness and solitude while machinery is in the area.

The new range developments (pipeline extensions and new troughs) all fall outside LWC units. Authorization of existing developments for reconstruction or repair would not affect LWCs given that they are pre-existing.

4.9.2. Impacts from Alternative B: Reduced Ground Disturbance

The impacts to the LWC units, in terms of naturalness, would be similar to the proposed action but would cause less impact to solitude for the short-term since machinery would not be used.

No new range improvements would be constructed and authorization of existing developments for reconstruction or repair would not affect LWCs given that they are pre-existing.

4.9.3. Impacts from Alternative C: No Action

Under the no action alternative, there would be no human-caused alterations to the existing landscape whether benefiting or detracting from the naturalness of the unit.

4.10. Wilderness

4.10.1. Impacts from Alternative A: Proposed Action

Combination & Aspen Treatments: Treatment units C-1 and C-2 lie within the Mount Grafton Wilderness. Treatment unit A-1 is within the Mount Grafton Wilderness. An MRDG was completed for this project (see Appendix F, *Minimum Requirements Decision Guide* (p.)). The minimum tool was determined to be prescribed fire/planned ignition. No new roads would be created. These two units are adjacent to a parallel treatment unit approved in the South Steptoe Watershed Restoration Plan.

Untrammeled — This alternative would impair the untrammeled character of wilderness. Implementing these actions (prescribed fire, or any of the adaptive management actions in the future) would each constitute a trammel by humans on the natural processes in wilderness. Prescribed fire would be a long-term impact to the untrammeled character of the wilderness. This trammel would remain an impact until the effects of the fire are no longer evident on the landscape. The exact duration of this effect would vary with fire behavior, precipitation, and regrowth of the vegetation, but could be estimated to be about 15–20 years. However, the

prescribed fire would be correcting previous trammeling (historic fire suppression), with the intent of reestablishing a mosaic fire pattern and natural fire regime, and preserving the natural aspen disturbance regime (also impacted by historic fire suppression). Further, while this is a trammel the method (fire) of the trammel mimics natural forces better than mechanical or other treatments.

Undeveloped — The use of helicopter (helitorch, or ping-pong drops) would constitute a development in wilderness because dropping people/equipment/materials into wilderness equates to a landing. Helicopters would be in the air over wilderness for limited periods of time for ignition and subsequent monitoring; though only the ignition would be considered a development. The benefit to the undeveloped character of using aircraft is that it would be very light on the land – no landings, or trailing from boots-on-the-ground would occur.

Hand ignition would not impact the undeveloped quality since no motorized vehicles or mechanized transport would be used. However the likelihood of many crew visits is high. Fire crews (+/- 10 people per crew) would need to hike into the site to use drip torches to light the fire, and for fire monitoring. This could entail many hikes in/out, possibly leading to some trail development.

Any of the adaptive management options (dropping seed from an aircraft; fencing) would constitute a development (if implemented would require site-specific NEPA analysis & MRDG). Each of these actions would temporarily impair wilderness.

Natural — The actions proposed are designed to correct historic fire suppression efforts and historic livestock overgrazing. Fire has been suppressed over the past century, which has led to a build-up of fuel, which results in high intensity, large fires rather than the historic pattern of more frequent, lower intensity fires. Pinyon pine and juniper have become more uniform and dense, and have expanded in to sagebrush communities. Aspen stands have seen encroachment from conifer species, which are crowding and shading the stands. Introducing management ignited fire, under prescription, would impact the natural character of wilderness negatively in the short-term with the goal of returning the natural component of fire into the wilderness environment. The unnatural conditions result from the impacts of humans, as discussed above.

The action would be implemented, and into the future natural fire would be allowed to play out as Fire for Resource Benefit.

Outstanding opportunities for solitude or a primitive and unconfined type of recreation — During treatment, recreational use may be temporarily impacted due to active fire. Long-term after treatments, as a result of the improved naturalness, including wildlife habitat improvements, the opportunities for wildlife viewing and/or hunting may be improved. Flights over wilderness are fairly rare over Mount Grafton; therefore the impact on solitude would be fairly noticeable, particularly during ignition. Monitoring flights would likely have less of an impact given that they could be of shorter duration, and they aren't dropping fire. These would be temporary impacts. After the treatments are complete, opportunities would return.

The duration of people on the ground when using ground ignition would be longer than with aerial ignition, but not as long as with hand cutting. The timing of the planned ignition/prescribed burning could be more impacting during the fall, as the majority of the use occurs during hunting season. Particularly, if visitors are in the remote backcountry and encounter fire crews would result in a greater impact on solitude.

Long-term after treatments, as a result of improved naturalness, including wildlife habitat improvement, the opportunities for wildlife viewing and/or hunting may be improved; thus improving opportunities for primitive recreation. Solitude would be temporarily impacted during the implementation of this alternative with personnel on the ground or aircraft overhead for monitoring; though after the treatments are complete, opportunities would return.

For any adaptive management actions, a site-specific NEPA and MRDG analysis would occur. Natural recovery by native plant species is preferable to seeding. However, if monitoring of the primary treatment demonstrates a need, adaptive management may utilize seeding with native seed only. This is also a trammeling effect of wilderness in the short-term, but again the naturalness would benefit in the long-term. Temporarily fencing the treatment units would be a development in wilderness, thereby negatively impacting wilderness character while in place. Although, by protecting the treatment, the likelihood of successful restoration would increase, therefore increasing the naturalness by reintroducing disturbance into the ecosystem in the long-term.

The proposed actions for range improvements would not affect wilderness character as all of these projects are located outside of wilderness areas.

4.10.2. Impacts from Alternative B: Reduced Ground Disturbance

All units identified for treatment would utilize naturally-started fire only, to obtain the objectives. No adaptive management treatments are identified.

Untrammeled — This alternative would not directly impair the untrammeled character of wilderness. Allowing only natural starts in wilderness would be in line with maintaining the untrammeled character. Fire would be managed to ensure it did not extend into areas which threatened life or property or for other avoidance measures. This could constitute some limited trammeling of a natural fire, though most actions could occur outside wilderness.

Undeveloped — No motorized or mechanized equipment are proposed for this alternative. No developments are proposed either. No negative impact (nor improvement) on the natural wilderness character under this alternative.

Natural — If only Wildland Fire for Resource Benefit are allowed in wilderness it could take 36 years to meet the objectives outlined in the plan, based on the average of 101 acres/year. For the aspen treatment alone, it could take 102-136 years and for the Combination treatment units, it could take 204-306 years. Many conifer species, such as white fir, pinyon pine, Utah and Rocky Mountain juniper, limber pine and Engelmann spruce can become dominant over aspen relatively quickly. Aspen stems have a life span of 80 to 150 years. This combined with the quick rate of senescence once overtopped causes entire clones of aspen to be lost in a matter of decades or less.

Ensuring fire is allowed to play its natural role in wilderness would improve this character by preserving the vegetative communities that are fire dependent, such as aspen. However, the origin of this departure from natural conditions is a result of human activity. If vegetation types are lost (e.g. aspen) or wildlife impacted (sage grouse) the natural character of wilderness would be impacted.

Outstanding opportunities for solitude or a primitive and unconfined type of recreation — This alternative, and the proposal overall, would not directly impact or promote this characteristic. During the treatments, recreational use may be temporarily impacted due to active fire. Long-term after treatments, as a result of the wildlife habitat improvements, the opportunities for wildlife

viewing and/or hunting may be improved. Solitude would be temporarily impacted during the implementation of this alternative with personnel on the ground or aircraft overhead monitoring the Fire for Resource Benefit; though after the fire are out, opportunities would return.

4.10.3. Impacts from Alternative C: No Action

The No Action Alternative is the current management situation. There would be no vegetation treatments implemented within the proposed project areas. However, the current Fire Management Plan allows for Fire for Resource Benefit in these areas currently, so the No Action would be the same as Alternative B.

4.11. Visual Resources

4.11.1. Impacts from Alternative A: Proposed Action

The proposed project would have no effect on the Land element within the two watersheds. The Vegetation and the Structures elements would be affected.

The contrast rating worksheets resulted in moderate and weak contrasts in the appearance of the vegetation as a result of the Proposed Action. In the short term (less than one year), treatments would be visually conspicuous with greater contrast: burned areas would be blackened, mechanically treated areas would present with toppled trees or mown sagebrush, for example. The results would be fairly distinct across the landscape. However, in the long-term (over one year), as the dead materials break down and new vegetation is growing the distinction would be lessened.

Chemical and chaining treatments would be the most noticeable treatment types to the casual observer. For chemical treatments, dying skeletons of juniper and pinyon pine would be uniform across the landscape within two years, and may remain for as many as 50 years. Chemical treatments on sagebrush would result in areas of dead sagebrush within a year, but would breakdown more rapidly, possibly within 5-10 years. Chaining treatments would be the most noticeable to the casual observer given that trees would be toppled, with roots exposed and earth disturbed.

In order to reduce the visual impact on the landscape, design measures are identified in Section 2.3.1.3, “Visual Resource Restrictions” (p. 19), which ensure that for all mechanical treatments edges will be feathered with runners of trees into drainages; and islands are identified prior to treatment to ensure a mosaic pattern within the more visually disturbing treatments. Rather than having the edges of treatment units cross hillsides, they should contour to avoid hard lines. These standards would help soften the edges of treatment areas to better mimic natural patterns across the landscape. These design standards must be of high priority, particularly in VRM Class II areas, in which 40% of the sagebrush restoration units and 100% of the woodland restoration units occur.

The character of the landscape would improve, in terms of structures, with the removal of the telephone lines along Highway 93. There would be a weak contrast in the line, with the end result of fewer structures visible on the landscape.

In summary, the area is a classic eastern Nevada landscape dominated by the typical basin and range topography, which lends to feelings of vastness and open space. The proposed action would

repeat the basic elements of form, line, color and texture and therefore conform to the appropriate VRM class objectives and the Ely RMP.

Range improvement projects would have minimal effect on visual resources. Pipeline reconstruction and extension would occur with minimal disturbance in primarily previously disturbed areas. The reservoirs and well development would entail more visual impacts, but are planned to occur in VRM Class IV, which would accommodate these actions.

4.11.2. Impacts from Alternative B: Reduced Ground Disturbance

For visual resources, this alternative would result in the least change to the landscape. Vegetation treatments would have a low impact on the visual components, given that only hand-cutting and prescribed fire would be utilized. These two treatment types would better mimic the natural patterns of the landscape than the mechanical treatments included in the proposed action.

Removal of the telephone poles and line would result in a weak change on the visual resources on the landscape, resulting in an improvement.

Range improvement projects would have minimal effect on visual resources. Pipeline reconstruction would occur with minimal disturbance in previously disturbed areas. The reservoirs and well development would entail more visual impacts, but are planned to occur in VRM Class IV, which would accommodate these actions. The power pole removal process, with the poles being cut at ground level rather than excavated will enhance the visual objectives in the short term for the area.

4.11.3. Impacts from Alternative C: No Action

Visual resources would remain the same if no vegetation treatments or range improvement projects were implemented.

4.12. Fuels and Fire Management

4.12.1. Fuels

4.12.1.1. Impacts from Alternative A: Proposed Action

Impacts of the proposed action are analyzed based on the conversion of vegetation targets to the seral class objectives as listed within the Proposed Action and compared to the desired future condition (DFC) as listed within the RMP. This analysis is based on the target vegetation only and does not include the treatment of the incidental vegetation types. As these vegetation types are not targeted and would be incorporated by the treatment design, it is not possible to quantify the impacts to these vegetation types. However, the treatment of these incidental vegetation types with the methods listed would bring them closer to the DFC percentages listed within the RMP.

Biophysical setting (BPS) model data sets and model descriptions have been utilized to conduct the analysis and determine departure both for FRCC values and departure from the DFC. FRCC analysis is based upon the reference condition listed within the BPS model descriptions.

Reference conditions represent the combination of the vegetation with the natural disturbance regime to represent the range of seral classes present prior to European influence.

The analysis of the impacts of the proposed action is based on the assumption that the objectives for the treatment units would be met through the implementation of the primary or adaptive management actions listed. Utilizing all of the treatment methods available, this analysis is based on the assumption that the treatments would be completed over a ten year period. However, actual implementation may occur over a longer timeframe. The information utilized for this analysis is presented in the tables and provided in Appendix B, *Biophysical Setting Classes* (p. 209). Based on the results from past treatments it is reasonable to expect that the objectives would be met.

Within the Proposed Action, a total of 3,677 acres of aspen (BPS Models Rocky Mountain Aspen Forest and Woodland and Inter-Mountain Basins Aspen-Mixed Conifer Forest and Woodlands) were targeted for treatment. The combined impact of the Proposed Action in relation to the RMP DFC, as well as current conditions, is presented within Table 4.1, "Proposed Action impacts to Aspen in relation to the RMP desired future condition" (p. 118). Under the Proposed Action there would be a shift in the composition towards a more stable aspen community. Acres listed as U would decrease under the Proposed Action and are likely areas where there are no aspen present. In this case, these acres would be re-categorized and listed as the existing vegetation type. Until these acres are inventoried, it is not possible to state that they actually are in a no aspen state. However the re-categorization of these no aspen acres would further help the composition percentages to be closer to the desired future condition.

Table 4.1. Proposed Action impacts to Aspen in relation to the RMP desired future condition

BPS MODEL & CLASS		Desired Future Condition (DFC)	Current Condition Percentages	Current Condition Difference from DFC	Proposed Action Resulting Percentages	Proposed Action Difference from DFC
Rocky Mountain Aspen Forest and Woodland	A	14%	20%	6%	18%	4%
	B	40%	17%	-23%	26%	-14%
	C	25%	18%	-7%	18%	-7%
	D	20%	15%	-5%	17%	-3%
	E	1%	2%	1%	2%	1%
	U	0%	29%	29%	20%	20%
Average Departure from DFC				12%		8%
BPS MODEL & CLASS		Desired Future Condition (DFC)	Current Condition Percentages	Current Condition Difference from DFC	Proposed Action Resulting Percentages	Proposed Action Difference from DFC
Inter-Mtn Basins Aspen Mixed- Conifer Forest & Woodland	A	14%	8%	-6%	12%	-2%
	B	40%	4%	-36%	25%	-15%
	C	25%	6%	-19%	17%	-8%
	D	20%	1%	-19%	12%	-8%
	E	1%	31%	30%	14%	13%
	U	0%	49%	49%	20%	21%
Average Departure from DFC				27%		11%

The FRCC calculations for the aspen show a 60% departure for Rocky Mountain Aspen Forest and Woodland and 80% for Inter-Mountain Basins Aspen-Mixed Conifer Forest and Woodlands pre-treatment. Post treatment departures show a 29% departure for Rocky Mountain Aspen Forest and Woodland and 39% for Inter-Mountain Basins Aspen-Mixed Conifer Forest and Woodlands. The decrease in departure represents the conversion towards a more stable aspen community. It

would be anticipated that inventorying the U class, as discussed above, would result in a reduction in U and a shift in the seral class percentages resulting in lower departures from DFC.

Within the proposed action there are 1,817 acres of Pinyon-Juniper Woodlands (BPS Model Great Basin Pinyon Juniper Woodland) was targeted for treatment. The combined impact of the Proposed Action in relation to the DFC as well as current conditions is presented within Table 4.2, "Proposed Action impacts to Pinyon-Juniper Woodlands in relation to the RMP desired future condition" (p. 119). The treatment of the vegetation on a project-specific scale would shift the classes towards classes A, B and C.

Table 4.2. Proposed Action impacts to Pinyon-Juniper Woodlands in relation to the RMP desired future condition

BPS MODEL & CLASS		Desired Future Condition (DFC)	Current Condition Percentages	Current Condition Difference from DFC	Proposed Action Resulting Percentages	Proposed Action Difference from DFC
GREAT BASIN PINYON JUNIPER WOODLAND	A	5%	0%	-5%	1%	-4%
	B	5%	0%	-5%	1%	-4%
	C	20%	13%	-7%	13%	-7%
	D	65%	38%	-27%	40%	-25%
	E	5%	23%	18%	21%	16%
	U	0%	27%	27%	24%	24%
Average Departure from DFC				15%		13%

The FRCC calculations for the Pinyon-Juniper Woodlands show a departure of 55% pre-treatment. The post treatment departure shows a decrease to 41%. This change in departure is a result of seral class D and E acres converting to earlier seral classes of A, B and C. It is likely that when the U class is inventoried, those acres falling into the native U class of tree cover in excess of 60% would be treated with the E class vegetation, increasing the acres treated and decreasing the departure from the DFC and the BPS reference condition.

Within the Proposed Action there are 2,123 acres of High Elevation Mixed Conifer (BPS Models Southern Rocky Mountain Mesic Montane Mixed Conifer Forest & Woodland and Rocky Mountain Subalpine Dry Mesic Spruce Fir Forest & Woodland) was targeted for treatment. The combined impact of the Proposed Action in relation to the DFC, as well as current conditions is presented within Table 4.3, "Proposed Action impacts to High Elevation Mixed Conifer in relation to the RMP desired future condition" (p. 120)below. Under the Proposed Action there would be an increase in classes A, C, and D and a reduction in class B. Proposed treatments within the high elevation mixed conifers are restricted to prescribed fire and fire for resource benefit. Mixed severity fires within this vegetation type would revert some to an early seral class while low severity areas that have been thinned would progress to a class C.

Table 4.3. Proposed Action impacts to High Elevation Mixed Conifer in relation to the RMP desired future condition

BPS MODEL & CLASS		Desired Future Condition (DFC)	Current Condition Percentages	Current Condition Difference from DFC	Proposed Action Resulting Percentages	Proposed Action Difference from DFC
Southern Rocky Mountain Mesic Montane Mixed Conifer Forest & Woodland	A	20%	3%	-17%	9%	-11%
	B	20%	80%	60%	69%	49%
	C	60%	14%	-46%	16%	-44%
	D	0%	0%	0%	5%	5%
	E	0%	2%	2%	1%	1%
	U	0%	1%	1%	1%	1%
Average Departure from DFC				15%		18%
BPS MODEL & CLASS		Desired Future Condition (DFC)	Current Condition Percentages	Current Condition Difference from DFC	Proposed Action Resulting Percentages	Proposed Action Difference from DFC
Rocky Mountain Subalpine Dry Mesic Spruce Fir Forest & Woodland	A	20%	3%	-17%	13%	-7%
	B	20%	25%	5%	22%	2%
	C	60%	42%	-18%	53%	-7%
	D	0%	28%	28%	11%	11%
	E	0%	1%	1%	0%	0%
	U	0%	1%	1%	0%	0%
Average Departure from DFC				12%		5%

The FRCC calculations for High Elevation Mixed Conifer shows a 60% departure for Rocky Mountain Aspen Forest and Woodland and 78% for Rocky Mountain Mesic Montane Mixed Conifer Forest. Post treatment departures show a 29% departure for Rocky Mountain Aspen Forest and Woodland and 30% for Rocky Mountain Mesic Montane Mixed Conifer.

Within the Proposed Action there are 3,884 acres of Mountain Mahogany targeted for treatment. The combined impact of the proposed action in relation to the DFC as well as current conditions is presented within Table 4.4, "Proposed Action impacts to Mountain Mahogany Woodlands in relation to the RMP desired future condition" (p. 120). Under the Proposed Action treatment of the vegetation and achievement of the objectives would shift the classes slightly toward class E.

Table 4.4. Proposed Action impacts to Mountain Mahogany Woodlands in relation to the RMP desired future condition

BPS MODEL & CLASS		Desired Future Condition (DFC)	Current Condition Percentages	Current Condition Difference from DFC	Proposed Action Resulting Percentages	Proposed Action Difference from DFC
Inter-Mountain Basins Mountain Mahogany Woodland and Shrubland	A	10%	50%	40%	45%	35%
	B	20%	18%	-2%	17%	-3%
	C	10%	12%	2%	11%	1%
	D	15%	4%	-11%	6%	-9%
	E	45%	14%	-31%	19%	-26%
	U	0%	2%	2%	1%	1%
Average Departure from DFC				15%		12%

The FRCC calculations for the Inter-Mountain Basins Mountain Mahogany Woodland and Shrubland shows a departure of 62% pre-treatment. The post treatment departure shows a decrease of 12% to an overall departure of 50%.

Within the Proposed Action there are 82,677 acres of sagebrush (BPS Models Great Basin Xeric Mixed Sagebrush Shrubland, Inter-Mountain Basin Big Sagebrush Shrubland, Columbia Plateau Low Sagebrush Steppe, Inter-Mountain Basin Montane Sagebrush Steppe and Inter-Mountain Basins Semi-Desert Shrub-Steppe) targeted for treatment. The combined impact of the Proposed Action in relation to the DFC as well, as current conditions, is presented within Table 4.5, "Proposed Action impacts to Sagebrush in relation to the RMP desired future condition" (p. 121).

Impacts to sagebrush as a whole reduce departure from desired future condition by treating later seral classes (C, D and E) and converting them to earlier seral classes (A, B and C). Departure for Great Basin Xeric Mixed Sagebrush Shrubland (typically dominated by black sagebrush) was reduced by an average of 6%, Inter-Mountain Basin Big Sagebrush Shrubland (typically dominated by Wyoming sagebrush) was reduced by an average of 4%, Columbia Plateau Low Sagebrush Steppe (typically dominated by low sagebrush) was reduced by an average of 4%, Inter-Mountain Basin Big Sagebrush Shrubland (typically dominated by *Artemisia tridentate ssp. Vaseyana*) was reduced by 4% and Inter-Mountain Basins Semi-Desert Shrub-Steppe (typically dominated by *Artemesia tridentata*) was reduced by an average of 5%. The Proposed Action has the greatest impact on the sagebrush vegetation communities within the analysis area.

Table 4.5. Proposed Action impacts to Sagebrush in relation to the RMP desired future condition

BPS MODEL & CLASS		Desired Future Condition (DFC)	Current Condition Percentages	Current Condition Difference from DFC	Proposed Action Resulting Percentages	Proposed Action Difference from DFC
Great Basin Xeric Mixed Sagebrush Shrubland	A	25%	0%	-25%	6%	-19%
	B	35%	4%	-31%	12%	-23%
	C	25%	13%	-12%	16%	-9%
	D	5%	26%	21%	21%	16%
	E	5%	1%	-4%	2%	-3%
	U	5%	55%	50%	42%	37%
Average Departure from DFC				24%		18%
BPS MODEL & CLASS		Desired Future Condition (DFC)	Current Condition Percentages	Current Condition Difference from DFC	Proposed Action Resulting Percentages	Proposed Action Difference from DFC
Inter-Mountain Basin Big Sagebrush Shrubland	A	25%	0%	-25%	5%	-20%
	B	35%	8%	-27%	15%	-20%
	C	25%	37%	12%	34%	9%
	D	5%	8%	3%	6%	1%
	E	5%	17%	12%	14%	9%
	U	5%	29%	24%	26%	21%
Average Departure from DFC				17%		13%
BPS MODEL & CLASS		Desired Future Condition (DFC)	Current Condition Percentages	Current Condition Difference from DFC	Proposed Action Resulting Percentages	Proposed Action Difference from DFC

Columbia Plateau Low Sagebrush Steppe	A	25%	0%	-25%	5%	-20%
	B	35%	0%	-35%	7%	-28%
	C	25%	27%	2%	27%	2%
	D	5%	1%	-4%	2%	—3%
	E	5%	2%	-3%	2%	–3%
	U	5%	69%	64%	57%	52%
Average Departure from DFC				22%		18%
BPS MODEL & CLASS		Desired Future Condition (DFC)	Current Condition Percentages	Current Condition Difference from DFC	Proposed Action Resulting Percentages	Proposed Action Difference from DFC
Inter-Mountain Basins Montane Sagebrush Steppe	A	25%	0%	-25%	5%	-20%
	B	35%	1%	-34%	9%	-26%
	C	25%	25%	0%	22%	-3%
	D	5%	16%	11%	14%	9%
	E	5%	50%	45%	43%	38%
	U	5%	8%	3%	7%	2%
Average Departure from DFC				20%		16%
BPS MODEL & CLASS		Desired Future Condition (DFC)	Current Condition Percentages	Current Condition Difference from DFC	Proposed Action Resulting Percentages	Proposed Action Difference from DFC
Inter-Mountain Basins Semi-Desert Shrub-Steppe	A	25%	0%	-25%	3%	-22%
	B	35%	1%	-34%	5%	-30%
	C	25%	1%	-24%	4%	-21%
	D	5%	2%	-3%	3%	-2%
	E	5%	5%	0%	5%	0%
	U	5%	91%	86%	80%	75%
Average Departure from DFC				23%		29%

The FRCC calculations for the Sagebrush show that Great Basin Xeric Mixed Sagebrush Shrubland is departed by 73%, Inter-Mountain Basin Big Sagebrush Shrubland by 57%, Columbia Plateau Low Sagebrush Steppe by 67%, Inter-Mountain Basin Montane Sagebrush Steppe by 69%, and Inter-Mountain Basins Semi-Desert Shrub-Steppe is departed by 99%. Following the implementation of the Proposed Action, Great Basin Xeric Mixed Sagebrush Shrubland departure decreased by 19% to a departure of 54%, Inter-Mountain Basin Big Sagebrush Shrubland decreased by 17% to a departure of 40%, Columbia Plateau Low Sagebrush Steppe decreased by 13% to a departure of 54%, Inter-Mountain Basin Montane Sagebrush Steppe decreased by 23% to a departure of 46%, and Inter-Mountain Basins Semi-Desert Shrub-Steppe decrease by 31% to a departure of 68%. Within the sagebrush systems being analyzed there are two expected uncharacteristic classes. The sagebrush systems that occur within areas previously seeded with crested wheatgrass would be mapped as uncharacteristic exotic. The RMP has a desired future condition of 5% for sagebrush systems to be in this class. Inventorying the U class of sagebrush within the designated treatments areas would likely result in some being classified as the native uncharacteristic classes of excess shrub or tree cover and would be treated as the most representative seral class. This may result in additional acres being treated and a further reduction in departure from DFC and the BPS reference condition.

The FRCC values were calculated utilizing the BPS data that The Nature Conservancy gathered for the Cave Valley and Lake Valley Watersheds. Under the Proposed Action, 94,178 acres, or 16% of the overall watershed, is proposed for treatment. With the treatment of the proposed

acreage and achievement of the specified seral classes for each treatment unit, overall departure from BPS reference condition for the watershed would be reduced. Given that the current departure from BPS reference condition for Cave Valley and Lake Valley Watersheds has been calculated at 58%, which is on the high side of FRCC 2, it is unlikely that the treatment of 16% of the watershed would result in a reduction in departure sufficient to achieve an FRCC 1 rating. However, departure would be expected to drop to a lower FRCC 2. Given the achievement of the objectives listed within the Proposed Action, the calculated resulting FRCC value is 43% or a reduction in departure of 15%. It would be likely that the treatment of incidental vegetation, implementation of wildfire use for resource benefit as well as the inventory of U class vegetation would further reduce the departure following the implementation of the Proposed Action, but it is not possible to quantify. The reduction in FRCC ratings by 19% for the watersheds would likely be achieved if the objectives are met.

4.12.1.2. Impacts from the Alternative B: Reduced Ground Disturbance

Impacts from Alternative B are analyzed based on the conversion of vegetation targets to the seral class objectives as listed within Alternative B and compared to the desired future condition (DFC) as listed within the RMP. This analysis is based on the target vegetation only and does not include the treatment of the incidental vegetation types. As these vegetation types are not targeted and would be incorporated by the treatment design, it is not possible to quantify the impacts to these vegetation types. However, the treatment of these incidental vegetation types with the methods listed would bring them closer to the DFC percentages listed within the RMP.

Biophysical setting (BPS) model data sets and model descriptions have been utilized to conduct the analysis and determine departure both for FRCC values and departure from the DFC. FRCC analysis is based upon the reference condition listed within the BPS model descriptions. Reference conditions represent the combination of the vegetation with the natural disturbance regime to represent the range of seral classes present prior to European influence.

The analysis of the impacts of the Alternative B is based on the assumption that the objectives for the treatment areas would be met through the implementation of the primary or secondary actions listed. By limiting the treatment methods to those that result in reduced ground disturbance outside of wilderness areas and utilizing wildland fire for resource benefit within wilderness areas to implement restoration it would take much longer than the Proposed Action to achieve restoration. This analysis is based on the assumption that the treatments outside of wilderness areas would be completed over a twenty year period. Based on the 36 year average of 101 acres of wildland fire per year within the wilderness areas the assumption is that treatment could take up to between 100 to 300 years to occur within the wilderness areas. The information utilized for this analysis is presented in the tables and provided in Appendix B, *Biophysical Setting Classes* (p. 209). Based on the results from past treatments it is reasonable to expect that the objectives would be met.

Impacts from implementation of Alternative B are the same as those analyzed for the Proposed Action and can be found in Section 4.12.1.1, “Impacts from Alternative A: Proposed Action” (p. 117) except for the Inter-Mountain Basin Big Sagebrush Shrubland BPS model. The resulting percentages and difference from DFC changed slightly for the A, B, and C seral classes and are outlined in Table 4.6, “Reduced Ground Disturbance Alternative impacts to Inter-Mountain Basin Big Sagebrush Shrubland in relation to the RMP desired future condition” (p. 124). This was a result of less acreage being treated within these seral classes and did not change the resulting FRCC rating of 39%.

Table 4.6. Reduced Ground Disturbance Alternative impacts to Inter-Mountain Basin Big Sagebrush Shrubland in relation to the RMP desired future condition

BPS MODEL & CLASS		Desired Future Condition (DFC)	Current Condition Percentages	Current Condition Difference from DFC	Proposed Action Resulting Percentages	Proposed Action Difference from DFC
Inter-Mountain Basin Big Sagebrush Shrubland	A	25%	0%	-25%	4%	-21%
	B	35%	8%	-27%	13%	-22%
	C	25%	37%	12%	37%	12%
	D	5%	8%	3%	6%	1%
	E	5%	17%	12%	13%	8%
	U	5%	29%	24%	26%	21%
Average Departure from DFC				17%		13%

The FRCC values were calculated utilizing the BPS data that The Nature Conservancy gathered for the Cave Valley and Lake Valley Watersheds. Under Alternative B, 79,000 acres, or 13% of the overall watershed, is proposed for treatment. With the treatment of the proposed acreage and achievement of the specified seral classes for each treatment unit, overall departure from BPS reference condition for the watershed would be reduced. Given that the current departure from BPS reference condition for Cave Valley and Lake Valley Watersheds has been calculated at 58%, which is on the high side of FRCC 2, it is unlikely that the treatment of 13% of the watershed and limiting the treatment methods to those that reduce the ground disturbance, would result in a reduction in departure sufficient to achieve an FRCC 1 rating. However, departure would be expected to drop to a lower FRCC 2 over a longer time than Alternative A. Given the achievement of the objectives listed within Alternative B, the calculated resulting FRCC value is 42% or a reduction in departure of 16%. It would be likely that the treatment of incidental vegetation, implementation of wildfire use for resource benefit as well as the inventory of U class vegetation would further reduce the departure following the implementation of the Proposed Action, but it is not possible to quantify. The reduction in FRCC ratings by 16% for the watersheds would likely be achieved if the objectives are met.

4.12.1.3. Impacts from Alternative C: No Action

Under the No Action Alternative, fuels management and vegetation treatments would continue as currently directed within the RMP and FMP. Vegetation treatments within the area would continue to be planned and prioritized as they are currently. Treatments identified and completed within the last ten years are used to calculate what would likely be completed over the next ten years. Over the last ten years there have been 3,537 acres treated within the planning area totaling 0.6% of the overall watersheds. If there were an additional 0.6% of acres treated within the watershed, with the same distribution, departure within the watershed from DFC or BPS reference condition would not improve measurably. Overall vegetation communities would continue to progress towards later seral classes.

4.12.2. Fire Management

4.12.2.1. Impacts from the Alternative A: Proposed Action and Alternative B: Reduced Ground Disturbance

Fire management within the Cave Valley and Lake Valley Watersheds would continue as prescribed within the 2004 FMP with the amendments listed under the Proposed Action. Following the achievement of the objectives listed within the Alternatives, there would be an increase in the amount of natural fuel breaks and a reduction in the continuity of the fuels. This would lead to a reduction in the risk for large wildfires outside of the natural disturbance regime. As vegetation with the watershed moves closer to FRCC 1, disturbances would more likely occur within the natural disturbance regime and thus further assist the watershed in reducing departure from the DFC and reference conditions. However, this would take much longer under Alternative B than Alternative A due to limiting the type of treatment methods available.

4.12.2.2. Impacts from Alternative C: No Action

Under the No Action Alternative fire management would continue as currently directed within the RMP and FMP. As vegetation progresses towards the later seral classes, fire would primarily play a replacement role where fires are potentially larger and more severe than the mixed severity fires within the reference condition for most BPS models. This would increase the risk of losing key ecosystem components and for conversion of communities to non-native annual grasses. Allowing wildland fire for resource benefit would be less probable as the risk of losing key ecosystem components and threatening property increases. The probability of introducing fire to the landscape where it can play a natural role in the environment would be reduced.

4.13. Climate Change

4.13.1. Impacts from Alternative A: Proposed Action

The Proposed Action incorporates several vegetation treatments targeted at reducing dense fuel loads primarily through the removal of pinyon pine and juniper trees from areas traditionally occupied predominantly by sagebrush. This may serve to counteract some of the potential increases in wildfire risk if, in fact, overall warming and drying occurs within the project area as predicted. The removal of the trees in large areas would eliminate some of the existing shading, but would allow additional moisture and space for growth for the remaining sagebrush and other smaller vegetation. The carbon sink properties lost with any tree removal may at least be partially offset by the increased vigor and abundance of the sagebrush and smaller vegetative species. The remaining vegetation treatments are targeted at improving regeneration rates in existing stands of high elevation tree species or rejuvenating aging stands of sagebrush and would not be impacted as directly by any of the predicted trends. Exact quantification of any of these impacts relative to the overall warming trend in the region is not possible due to the lack of site-specific research and general controversy surrounding the topic of climate change however, the scale and lengthy timeframe of expected implementation ensures that effects resulting from this project are well under established thresholds. The proposed range improvements are not anticipated to be affected by any of the predicted climate change patterns.

4.13.2. Impacts from Alternative B: Reduced Ground Disturbance

Alternative B incorporates several vegetation treatments targeted at reducing dense fuels loads primarily through the removal of pinyon pine and juniper trees from areas traditionally occupied predominantly by sagebrush. Without the use of mechanical or chemical methods the total area of treatment within the watersheds may be reduced, potentially reducing the overall effectiveness and falling short of the stated objective to "move the landscape within the Cave Valley and Lake Valley Watersheds toward FRCC 1 with a mosaic of seral stages attaining the potential cover percentages of grasses and forbs for the respective biophysical models." These treatments may still serve to counteract some of the potential increases in wildfire risk if, in fact, overall warming and drying occurs within the project area as predicted. The removal of the trees in large areas would eliminate some of the shading, but would allow additional moisture and space for growth for the remaining sagebrush and other smaller vegetation. The carbon sink properties lost with any tree removal may at least be partially offset by the increased vigor and abundance of the sagebrush and smaller vegetative species. The remaining vegetation treatments are targeted at improving regeneration rates in existing stands of high elevation tree species and would not be impacted as directly by any of the predicted trends. Exact quantification of any of these impacts relative to the overall warming trend in the region is not possible due to the lack of site-specific research and general controversy surrounding the topic of climate change however, the scale and lengthy timeframe of expected implementation ensures that effects resulting from this project are well under established thresholds. The proposed range improvements are not anticipated to be affected by any of the predicted climate change patterns.

4.13.3. Impacts from Alternative C: No Action

The No Action Alternative does not include any vegetation treatments and would not potentially counteract any of the trends predicted to support increased risk of wildfires. However, exact quantification of any of these impacts relative to the overall warming trend in the region is not possible due to the lack of site-specific research and general controversy surrounding the topic of climate change.

4.14. Cumulative Effects

As defined by the Council on Environmental Quality (CEQ) Regulations for Implementing 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."

The general area reviewed as the Cumulative Effects Study Area includes the entire Cave Valley and Lake Valley Watersheds and nearby areas within the surrounding watersheds, including South Steptoe Valley, White River Central Fox-Gap Mountain, Dry Lake Valley, Patterson Wash, Spring Valley South West, Hamblin Valley, and South Spring Valley Watersheds. In addition to the site specific analysis included below, a comprehensive cumulative effects analysis can be found in Section 4.28 of the Ely Proposed Resource Management Plan/Final Environmental Impact Statement (November 2007).

4.14.1. Past, Present, and Reasonably Foreseeable Future Actions

4.14.1.1. Past Actions

Past actions in the area include grazing, mining, oil and gas exploration, recreation, hunting, fuels treatments (generally chainings and mowings), range improvement projects, development subject to rights-of-way, and wildfire. A Wilderness Management Plan has recently been completed for the Fortification Range, Parsnip Peak, and White Rock Range Wilderness Areas. A watershed restoration plan was recently approved for the South Steptoe Valley Watershed that encompasses the areas immediately north of Cave and Lake Valleys and authorizes seven vegetation treatment units, including a proposed prescribed fire treatment within the Mount Grafton Wilderness Area along the boundary of the watersheds. Several fuels treatments have also been completed in the cumulative effects study area, totaling approximately 6,804 acres. Treatments included prescribed fire, mechanical removal and/or thinning of pinyon pine and juniper and the mechanical treatment of sagebrush. There have been approximately 67,588 acres of wild fires within the cumulative effects study area.

4.14.1.2. Present Actions

Present actions include wildfire/fuels management, mining, oil and gas exploration, recreation, grazing and hunting. The Silver State Trail traverses the project area and is a frequent location for organized motorized race events and general recreational usage. The Southwest Intertie Project (SWIP) corridor is a powerline project that is currently under construction and crosses the southern area of both watersheds.

4.14.1.3. Reasonably Foreseeable Future Actions

Reasonably foreseeable future actions include hunting, oil and gas exploration, recreation, grazing, travel management, and wildfire/fuels management. Watershed Restoration Plans are currently being developed for the areas surrounding Cave Valley and Lake Valley, including White River Central Fox-Gap Mountain, Dry Lake Valley, Patterson Wash, Spring Valley South West, Hamblin Valley, and South Spring Valley Watersheds. Each of these efforts is at various stages in the process, but all would incorporate vegetation and other treatments targeted to improve the health of the landscape.

The Egan Range Aspen Restoration Treatment incorporates a combination of hand-felling of conifers, fencing of aspen stands to reduce herbivory of the aspen by ungulates, and/or prescribed fire to restore quaking aspen communities in the Egan Range. The South Steptoe Travel Management Plan includes the land within the South Steptoe Valley Watershed and a few surrounding areas and will potentially alter usage of some of the existing roads within the area. The Silver State Trail is proposed to be extended north into White Pine County and will continue to be a frequent location for organized motorized race events and general recreational usage. A Wilderness Management Plan for the Mount Grafton, South Egan Range, Far South Egans, and Highland Ridge Wilderness Areas is currently being developed. The Wilson Creek Wind Energy Project is currently in the planning and design stages and a portion of the proposed project area is located within the southeast area of Lake Valley. The Southern Nevada Water Authority (SNWA) Groundwater Development Project also crosses the southern portions of Cave and Lake Valleys.

The proposed corridor would accommodate a pipeline and powerlines and there is a proposed pumping station located near Dutch John Mountain in the southwestern area of Lake Valley.

4.14.2. Cumulative Effects Summary

4.14.2.1. Rangeland Vegetation

Alternatives A and B, in combination with cumulative projects, work toward the desired range of conditions for rangeland vegetation in Cave Valley and Lake Valley Watersheds. Restoration and fuels treatments have or will directly contribute to achievement of this desired range of conditions. Development projects (i.e. oil and gas exploration, SWIP, SNWA project, etc.) include the appropriate revegetation practices to allow for the long-term persistence of rangeland vegetation.

4.14.2.2. Recreation

Cross country vehicular travel within the project area has occurred for several years. The Proposed Action and Reduced Ground Disturbance Alternative may contribute to impacts of past and present cross country vehicular travel by allowing for easier access through removal of existing vegetative barriers. Present and future actions, such as implementation and enforcement of the Ely District RMP, supported by the development of individual travel management plans, would help eliminate cross country vehicular travel. Recreational opportunities such as hunting and wildlife viewing have also occurred within the project area for several years. Present vegetation treatments combined with future vegetation treatments may improve overall habitat conditions for wildlife and promote better hunting and wildlife viewing opportunities over the long term.

4.14.2.3. Lands with Wilderness Characteristics

The vegetation treatments would be a human caused imprint of man on the land, which would impact the naturalness of the LWC units. Over time the area would appear natural to the casual observer in the sense that they could not tell that the landscape had been modified by humans. If units of LWC are determined to not be protected for their wilderness characteristics, other developments (e.g. powerlines, wind generation projects) would impact those areas, diminishing or eliminating the wilderness characteristics.

4.14.2.4. Fuels and Fire Management

Past and present actions occurring within the watersheds have been incorporated into the analysis for the Proposed Action, Reduced Ground Disturbance Alternative, and the No Action Alternative. In general, past projects have been relatively small in size and, while beneficial in accomplishing the objective for the specific treatment (i.e. fuel breaks for Wildland Urban Interface), they are not substantial enough to contribute to a reduction in departure within the overall watershed. Future actions within the watershed include the continuation of land management as prescribed under the current RMP. Cumulative impacts resulting from the combination of the reasonably foreseeable future actions with the past and present actions within the watershed are minimal and not measurable when added to the impacts of the Proposed Action, Reduced Ground Disturbance Alternative, or No Action Alternative.

Fire management would continue to occur as dictated by the current Fire Management Plan (2004) and RMP. The combination of past, present and reasonably foreseeable future actions with the impacts of the Proposed Action, Reduced Ground Disturbance Alternative, or No Action Alternative are minimal and not measureable.

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Chapter 5. Tribes, Individuals, Organizations, or Agencies Consulted

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5.1. Organization and Agency Coordination

- Eastern Nevada Landscape Coalition
- Nevada Department of Wildlife
- Nevada State Historic Preservation Office
- U.S. Fish and Wildlife Service

5.2. Tribal Coordination

On May 3, 2011 letters were mailed to the Moapa Band of Paiutes, Paiute Indian Tribe of Utah, Confederated Tribe of the Goshute Reservation, Duckwater Shoshone Tribe, and the Ely Shoshone Tribe extending invitations for tribal consultation regarding the Cave Valley and Lake Valley Watershed Restoration Plan. The tribes were requested to assist in identifying any traditional religious or cultural sites of importance. No sites were identified or concerns raised by any of the tribes as a result of the letters.

5.3. Request for Input from Interested Publics

On April 1, 2011 a letter was mailed to those parties that had previously expressed interest in the watershed assessment process inviting them to provide input. On June 2, 2011 a letter was mailed to the same group of people announcing a public meeting to be held at the Ely District Office on June 16, 2011. On June 7, a third letter was mailed announcing the addition of a second public meeting to be held on June 21, 2011 at the Caliente Field Office. There were five attendees at the meeting on June 16 and six attendees at the meeting on June 21. Written comments were received from eight entities (seeAppendix E, *Public Comment Matrix* (p. 241)). Additionally, a site visit was requested by one of the commenters and was conducted on August 24, 2011. All other commenters were invited to attend, but only two entities, Western Watersheds Project and Nevada Department of Wildlife, were able to be present.

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Chapter 6. List of Preparers

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Table 6.1. List of Preparers

Name	Title	Responsible for the Following Section(s) of this Document
Gloria Tibbetts	Planning and Environmental Coordinator	Project Lead, NEPA Compliance, Environmental Justice
Kyle Teel	Fire Ecologist	Fuels and Fire Management
Ken Vicencio	Range Management Specialist	Livestock Grazing, Rangeland Vegetation
Amanda Anderson	Rangeland Management Specialist	Livestock Grazing, Rangeland Vegetation
Zach Peterson	Forester	Forest and Woodland Vegetation, Vegetative Products
Nancy Williams	Wildlife Biologist	Wildlife, Migratory Birds, Threatened and Endangered Species, Special Status Species
Mark D'Aversa	Hydrologist	Air Quality, Soil, Water Resources, Water Quality, Floodplains, Wetlands/Riparian Areas, Farmlands
Mindy Seal	Natural Resource Specialist	Non-native Invasive and Noxious Species
Shawn Gibson	Archeologist	Cultural/Paleontological/Historical Resources
Emily Simpson	Outdoor Recreation Planner (Wilderness)	Wilderness, Special Designations, Visual Resources, Land with Wilderness Characteristics
Gus Malon	Outdoor Recreation Planner	Recreation
John Miller	Park Ranger (Wilderness)	Recreation
Melanie Peterson	Environmental Protection Specialist	Hazardous Materials, Human Health and Safety
Elvis Wall	Native American Coordinator	Native American Coordination
Kyle Hansen	Watershed Coordinator	General Information
Brenda Linnell	Realty Specialist	Lands and Realty
David R. Davis	Geologist	Mineral Resources

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Chapter 7. References

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Barton, D.C. and A.L. Holmes. 2007. Off-highway vehicle trail impacts on breeding songbirds in northeastern California. Journal of Wildlife Management 71(5): 1617-1620.

Connelly, J. W., M. A. Schroeder, A. R. Sands, and C. E. Braun. 2000. Guidelines to manage sage grouse populations and their habitats. Wildlife Society Bulletin 28:967-985.

Floyd, T., C.S. Elphick, G. Chisholm, K. Mack, R.G. Elston, E.M. Ammon, and J.D. Boone. 2007. Atlas of the breeding birds of Nevada. University of Nevada Press, Reno, NV.

Havlina et al. 2010. Interagency Fire Regime Condition Class website. USDA Forest Service, USDA Department of the Interior, and The Nature Conservancy [www.frcc.gov] (accessed 05/30/2011).

Hillis, J.M., M.J. Thompson, J.E. Canfield, L.J. Lyon, C.L. Marcum, P.M. Dolan, D.W. Cleery. 1991. Defining elk security: The Hillis Paradigm. *In* Elk Vulnerability – A Symposium. Montana State University, Bozeman, April 10-12, 1991.

Holechek, J. L., R. D. PiepeR, AND C. H. Herbel. 2004. Range management: principles and practices. 5th ed. Upper Saddle River, NJ, USA: Prentice-Hall Book Co.

Lyon and Christensen. 1992. A partial glossary of elk management terms. Gen. Tech. Rep. INT-288. Ogden. UT: U.S. Dept. of Ag., Forest Service, Intermountain Research Station. 6p.

Miller, S.G. and L.K. Richard. 1997. Recreational trails and avian communities. Department of Fishery and Wildlife Biology Colorado State University. Fort Collins, CO.

State Protocol Agreement between the Bureau of Land Management, Nevada and the Nevada Historic Preservation Office for Implementing the National Historic Preservation Act, October 26, 2009.

USDI-BLM. 1991. Final EIS - Vegetation Treatments on BLM Lands in Thirteen Western States

USDI-BLM, USDI-FWS, USDA-Forest Service, Oregon Department of Fish and Wildlife and Oregon Department of State Lands. 2000. Greater Sage Grouse and Sagebrush/Steppe Ecosystems: Management Guidelines.

USDI-BLM. 2004. National Sage Grouse Habitat Conservation Strategy.

USDI-BLM. 2004. Ely Field Office Fire Management Plan: Eastern Nevada Fire Planning Unit.

USDI-BLM. 2007. Ely Proposed Resource Management Plan/Final Environmental Impact Statement.

USDI-BLM. 2007. Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Final Programmatic Environmental Impact Statement and Record of Decision.

USDI-BLM. 2008. Ely District Record of Decision and Approved Resource Management Plan

USDI-BLM. 2011. BLM Manual 1626 – Travel and Transportation Management.

Wildlife Action Plan Team. 2006. Nevada Wildlife Action Plan. Nevada Department of Wildlife, Reno.

Wisdom, M.J., H.K. Preisler, N.J. Cimon, B.K. Johnson. 2004. Effects of off-road recreation on mule deer and elk. Transactions of the North American Wildlife and Natural Resources Conference 69.

Wisdom, M.J., N.J. Cimon, B.K. Johnson, E.O. Garton, and J.W. Thomas. 2005. Spatial partitioning by mule deer and elk in relation to traffic. Pages 53-66 *in* Wisdom, M.J., technical editor, The Starkey Project: a synthesis of long-term studies of elk and mule deer. Reprinted from the 2004 Transactions of North American Wildlife and Natural Resources Conference, Alliance Communications Group, Lawrence, Kansas, USA.

Appendix A. Site-specific information for vegetation treatments and range improvements

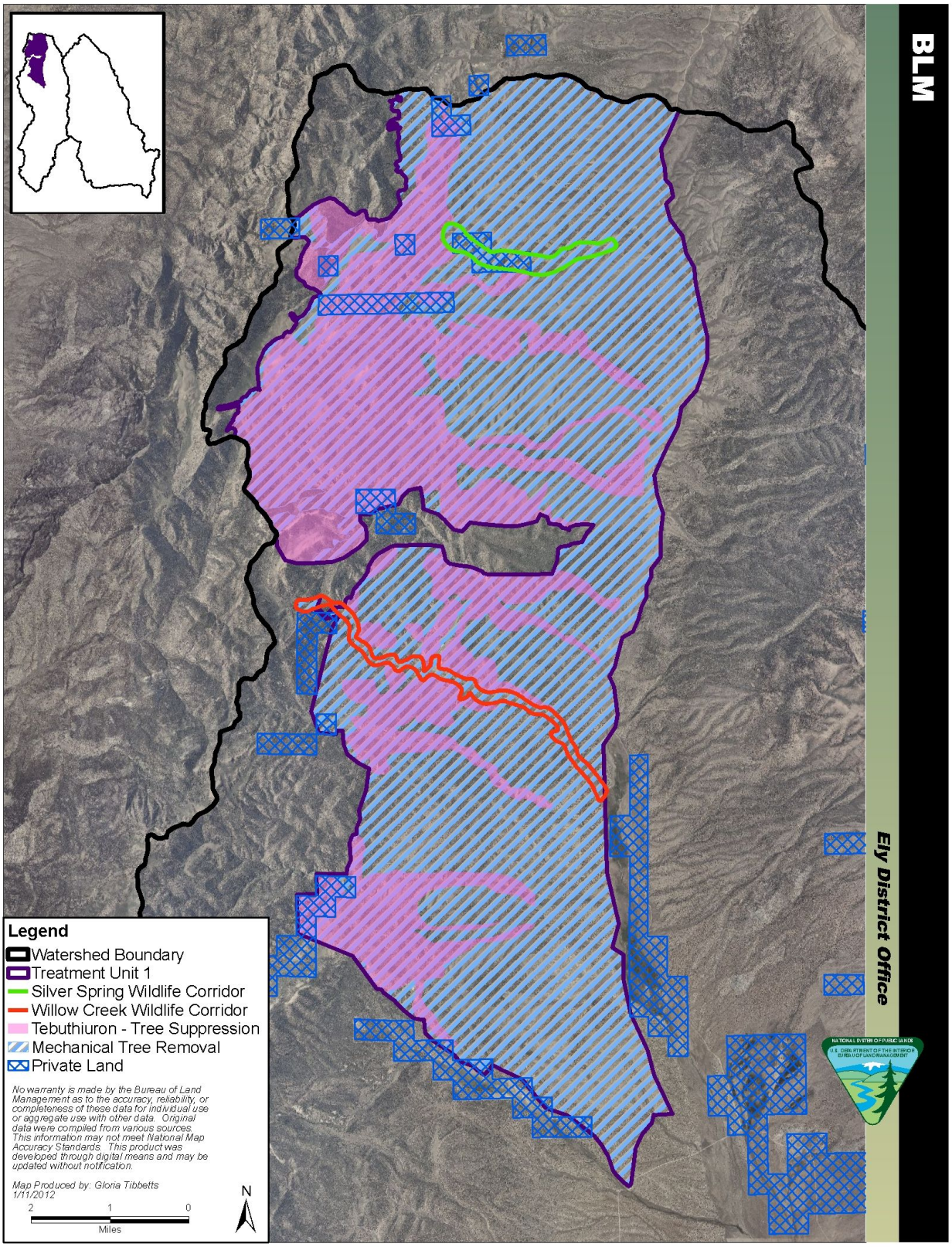
A.1. Vegetation Treatment Units

A.1.1. Treatment Unit S-1

Treatment Unit S-1 consists of a total of 32,119 acres and 60-75% of that area, or approximately 19,271-24,089 acres, would be targeted for treatment.

Table A.1. Vegetation Types for Treatment Unit S-1

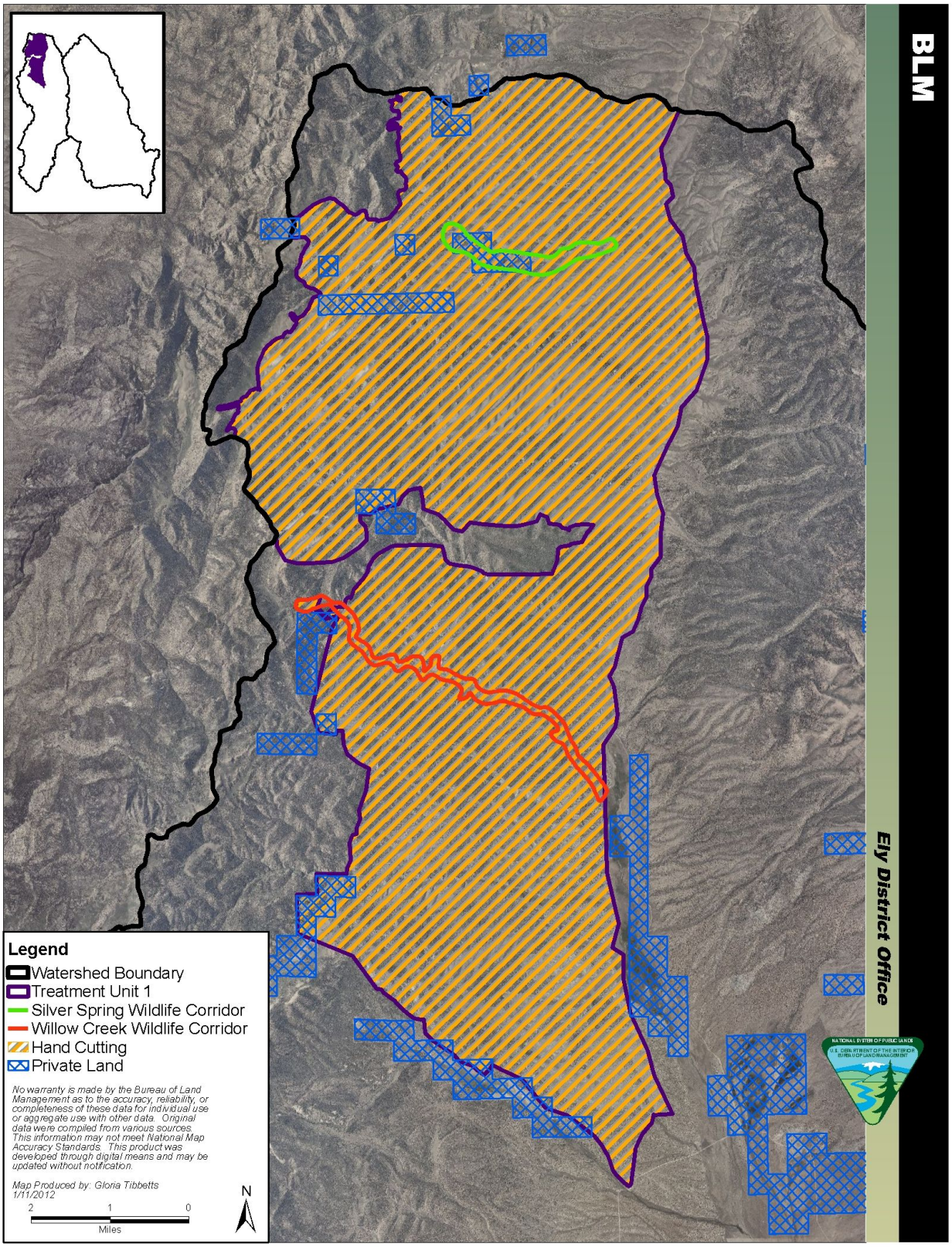
Target Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Sagebrush	26,680	16,008	20,010
TOTALS	26,680	16,008	20,010
Incidental Treatment Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Pinyon-Juniper Woodlands	3,066	0	2,300
Avoidance Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Mountain Mahogany	1,528	0	0
High Elevation Conifer (Mixed Conifer)	9	0	0
Aspen	1	0	0
Salt Desert Scrub	9	0	0
Riparian Wetlands	610	0	0



Map A.1. Treatment Unit S-1 — Alternative A: Proposed Action

Appendix A Site-specific information for vegetation treatments and range improvements
Treatment Unit S-1

November 5, 2012



Map A.2. Treatment Unit S-1 — Alternative B: Reduced Ground Disturbance

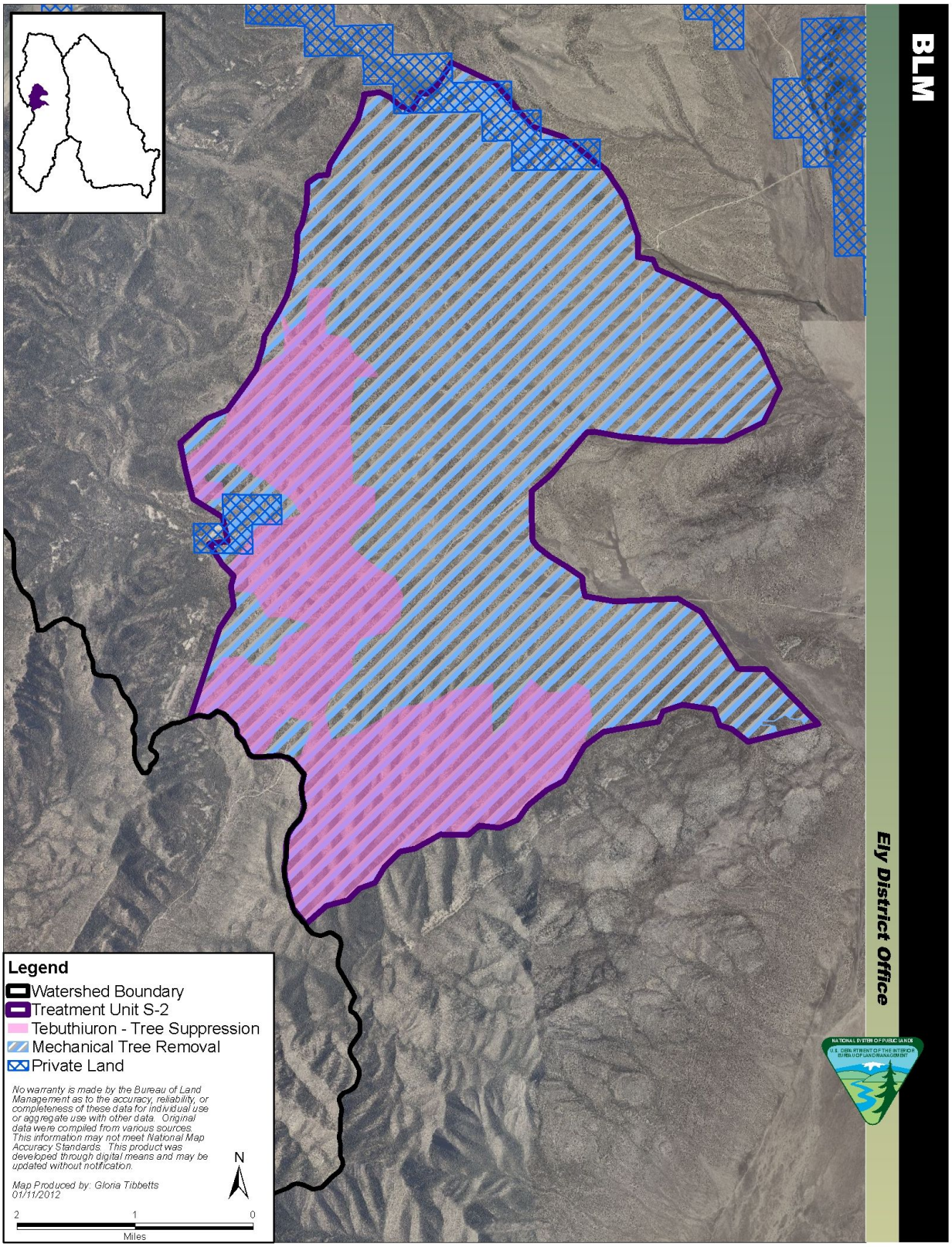
Appendix A Site-specific information for vegetation treatments and range improvements
Treatment Unit S-1

A.1.2. Treatment Unit S-2

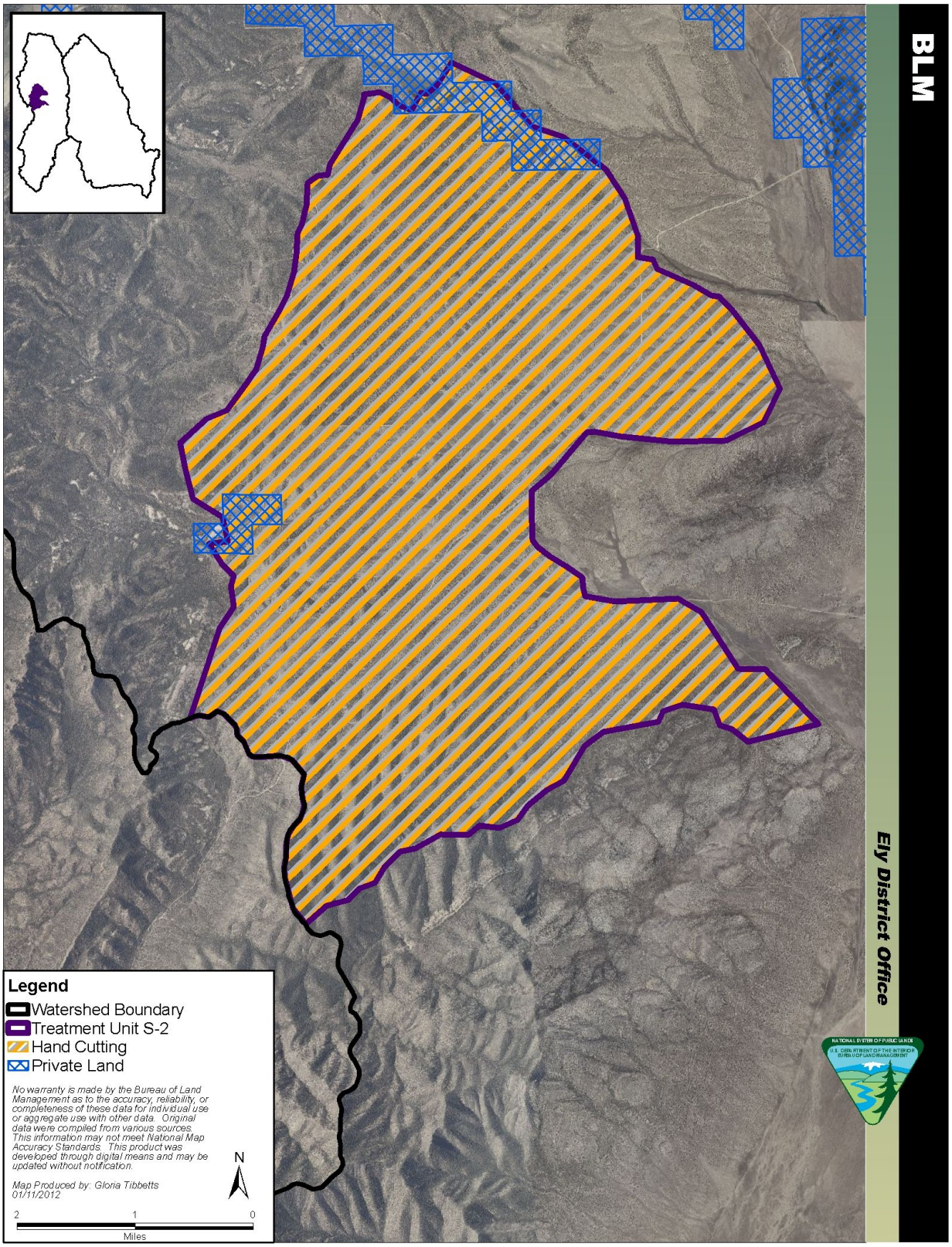
Treatment Unit S-2 consists of a total of 13,451 acres and 60-75% of that area, or approximately 8,071-10,088 acres, would be targeted for treatment.

Table A.2. Vegetation Types for Treatment Unit S-2

Target Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Sagebrush	11,301	6,781	8,476
TOTALS	11,301	6,781	8,476
Incidental Treatment Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Pinyon-Juniper Woodlands	1,225	0	919
Avoidance Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Mountain Mahogany	7	0	0
Salt Desert Scrub	56	0	0
Riparian Wetlands	765	0	0



Map A.3. Treatment Unit S-2 — Alternative A: Proposed Action



Map A.4. Treatment Unit S-2 — Alternative B: Reduced Ground Disturbance

Appendix A Site-specific information for vegetation treatments and range improvements
Treatment Unit S-2

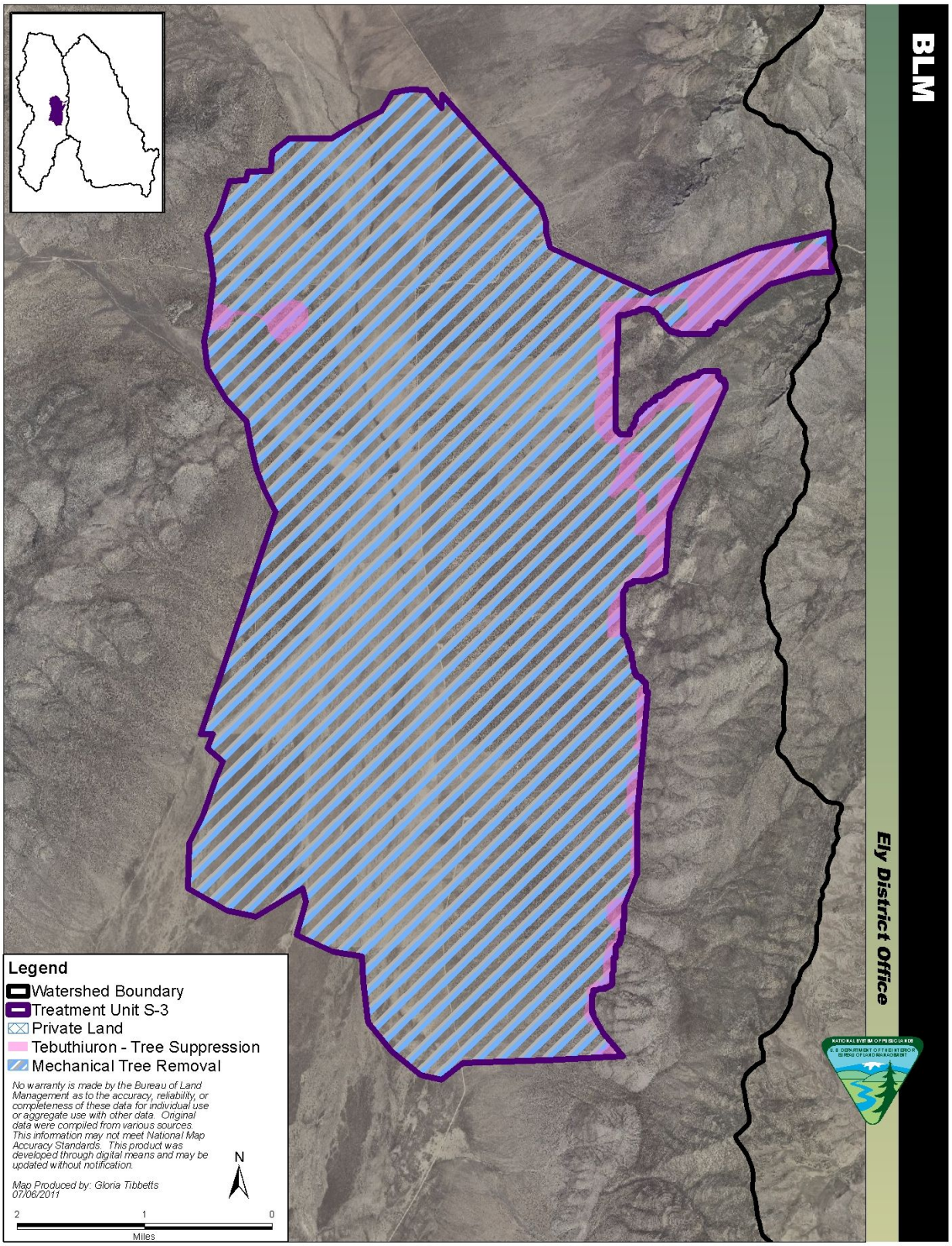
November 5, 2012

A.1.3. Treatment Unit S-3

Treatment Unit S-3 consists of a total of 14,217 acres and 60-75% of that area, or approximately 8,530-10,663 acres, would be targeted for treatment.

Table A.3. Vegetation Types for Treatment Unit S-3

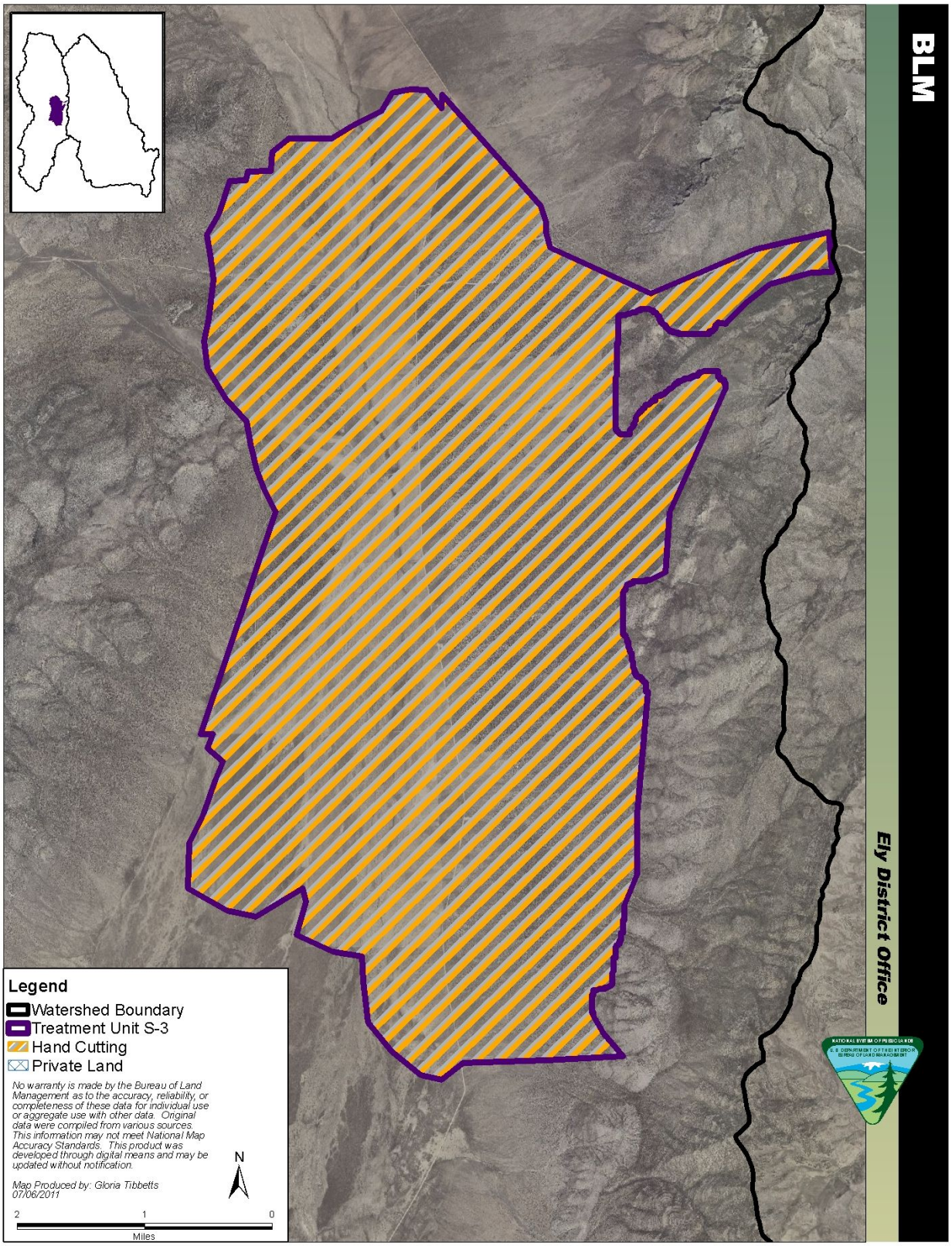
Target Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Sagebrush	11,747	7,048	8,810
TOTALS	11,747	7,048	8,810
Incidental Treatment Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Pinyon-Juniper Woodlands	52	0	39
Avoidance Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Mountain Mahogany	14	0	0
Salt Desert Scrub	2114	0	0
Riparian Wetlands	218	0	0



Map A.5. Treatment Unit S-3 — Alternative A: Proposed Action

Appendix A Site-specific information for vegetation treatments and range improvements
Treatment Unit S-3

November 5, 2012



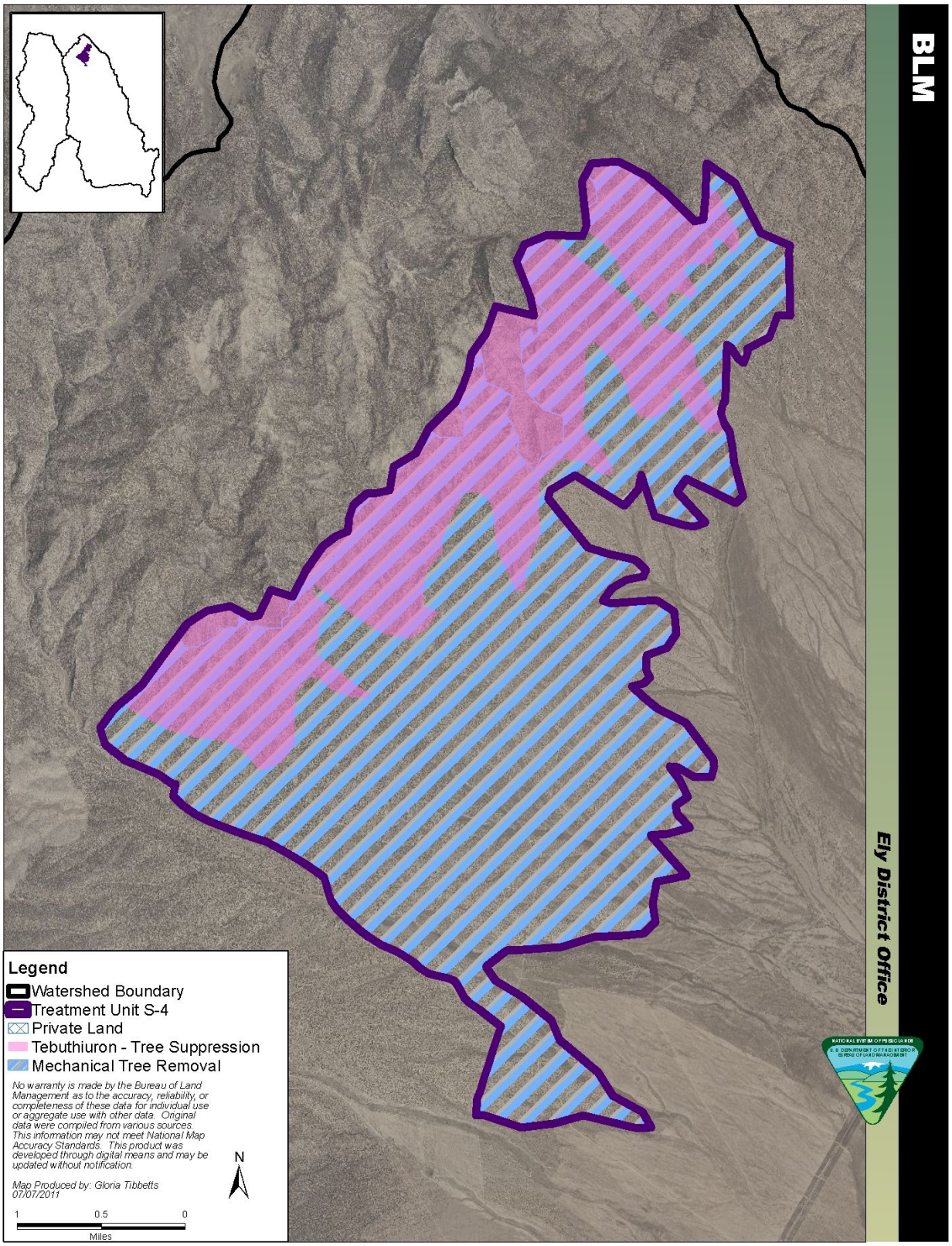
Map A.6. Treatment Unit S-3 — Alternative B: Reduced Ground Disturbance

A.1.4. Treatment Unit S-4

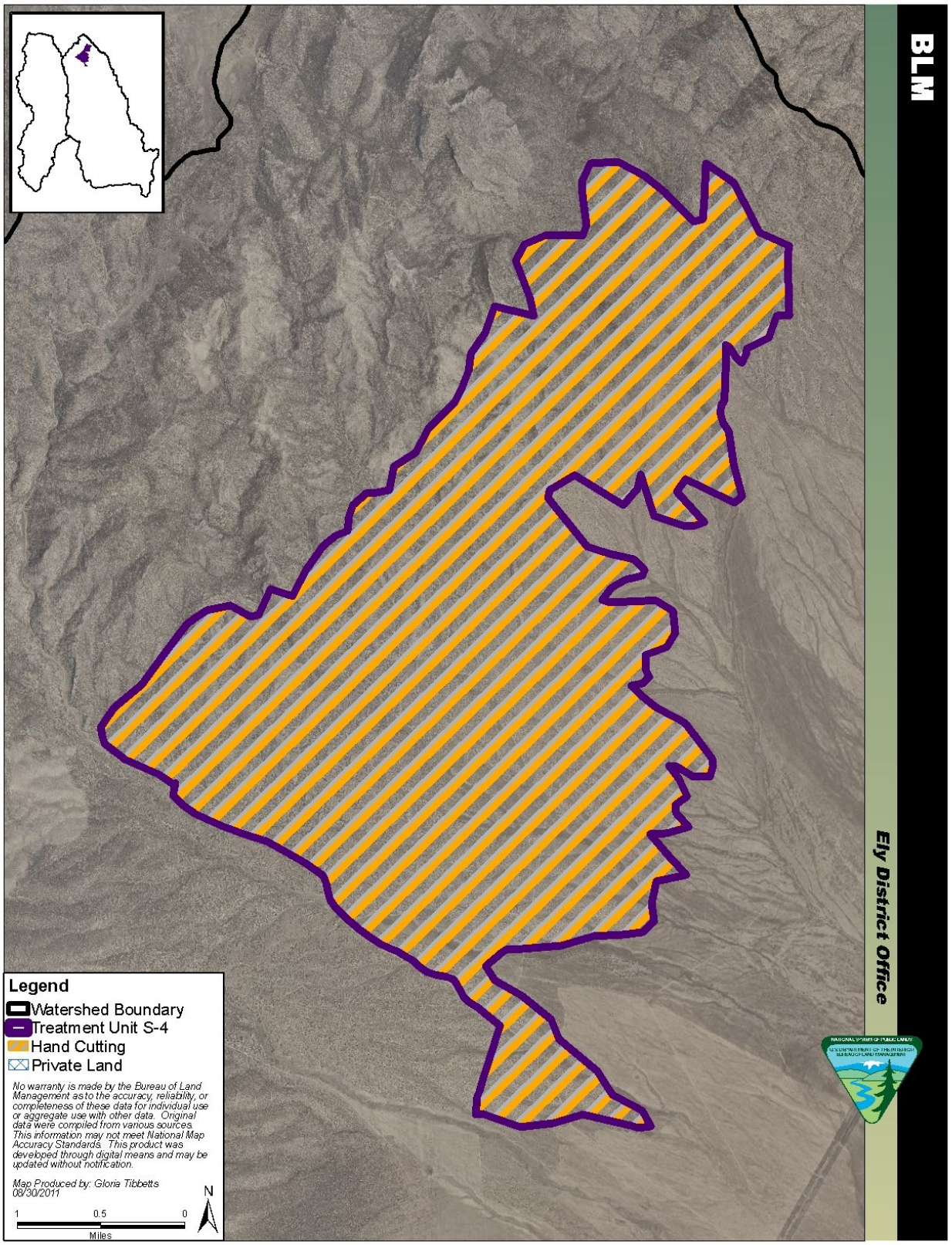
Treatment Unit S-4 consists of a total of 6,505 acres and 60-75% of that area, or approximately 3,903-4,879 acres, would be targeted for treatment.

Table A.4. Vegetation Types for Treatment Unit S-4

Target Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Sagebrush	5,643	3,386	4,232
TOTALS	5,643	3,386	4,232
Incidental Treatment Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Pinyon-Juniper Woodlands	434	0	326
Avoidance Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Salt Desert Scrub	231	0	0
Riparian Wetlands	178	0	0



Map A.7. Treatment Unit S-4 — Alternative A: Proposed Action



Map A.8. Treatment Unit S-4 — Alternative B: Reduced Ground Disturbance

Appendix A Site-specific information for vegetation treatments and range improvements
Treatment Unit S-4

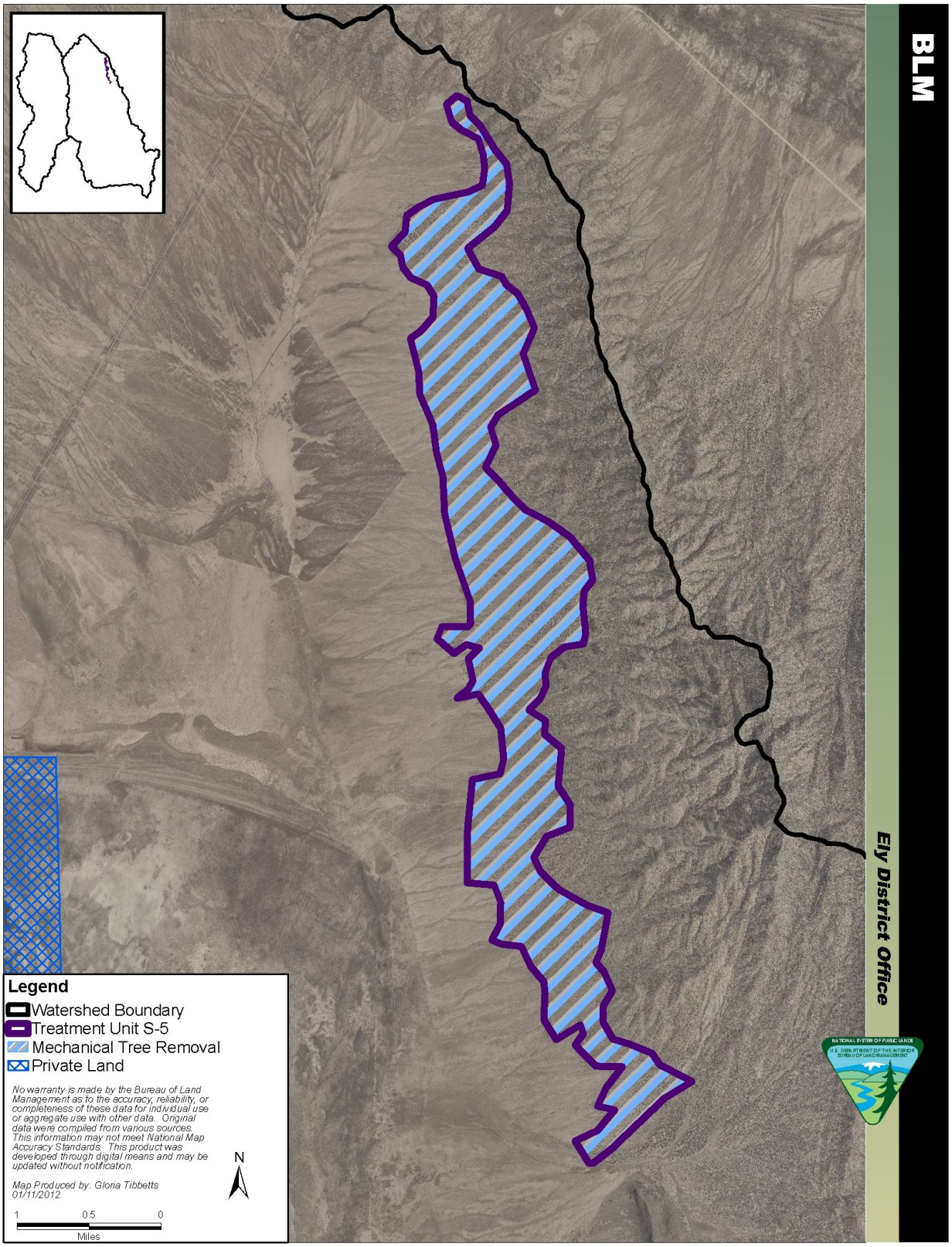
November 5, 2012

A.1.5. Treatment Unit S-5

Treatment Unit S-5 consists of a total of 2,469 acres and 60-75% of that area, or approximately 1,481-1,852 acres, would be targeted for treatment

Table A.5. Vegetation Types for Treatment Unit S-5

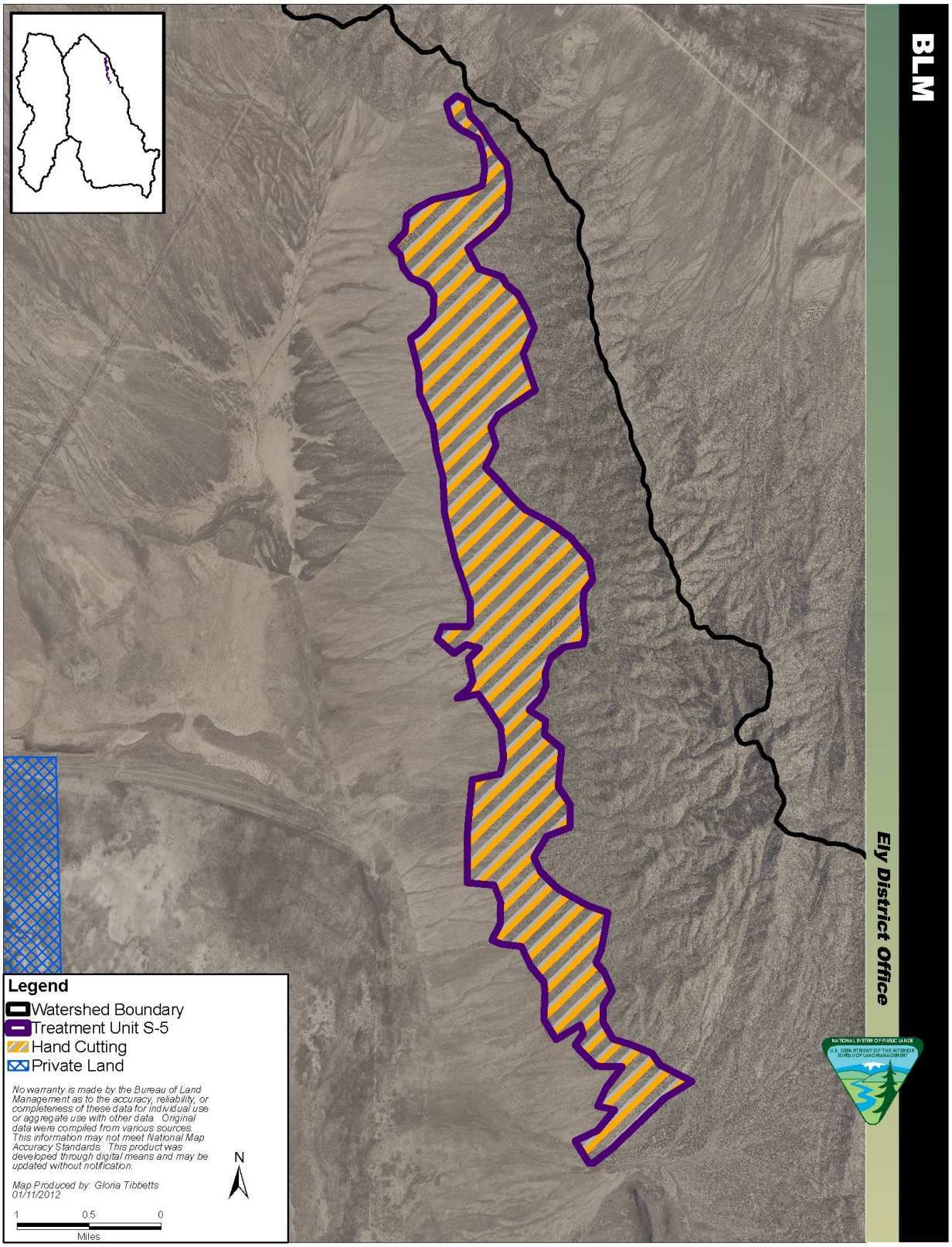
Target Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Sagebrush	2,428	1,457	1,821
TOTALS	2,428	1,457	1,821
Incidental Treatment Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Pinyon-Juniper Woodlands	1	0	1
Avoidance Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Salt Desert Scrub	7	0	0
Riparian Wetlands	23	0	0



Map A.9. Treatment Unit S-5 — Alternative A: Proposed Action

Appendix A Site-specific information for vegetation treatments and range improvements
Treatment Unit S-5

November 5, 2012



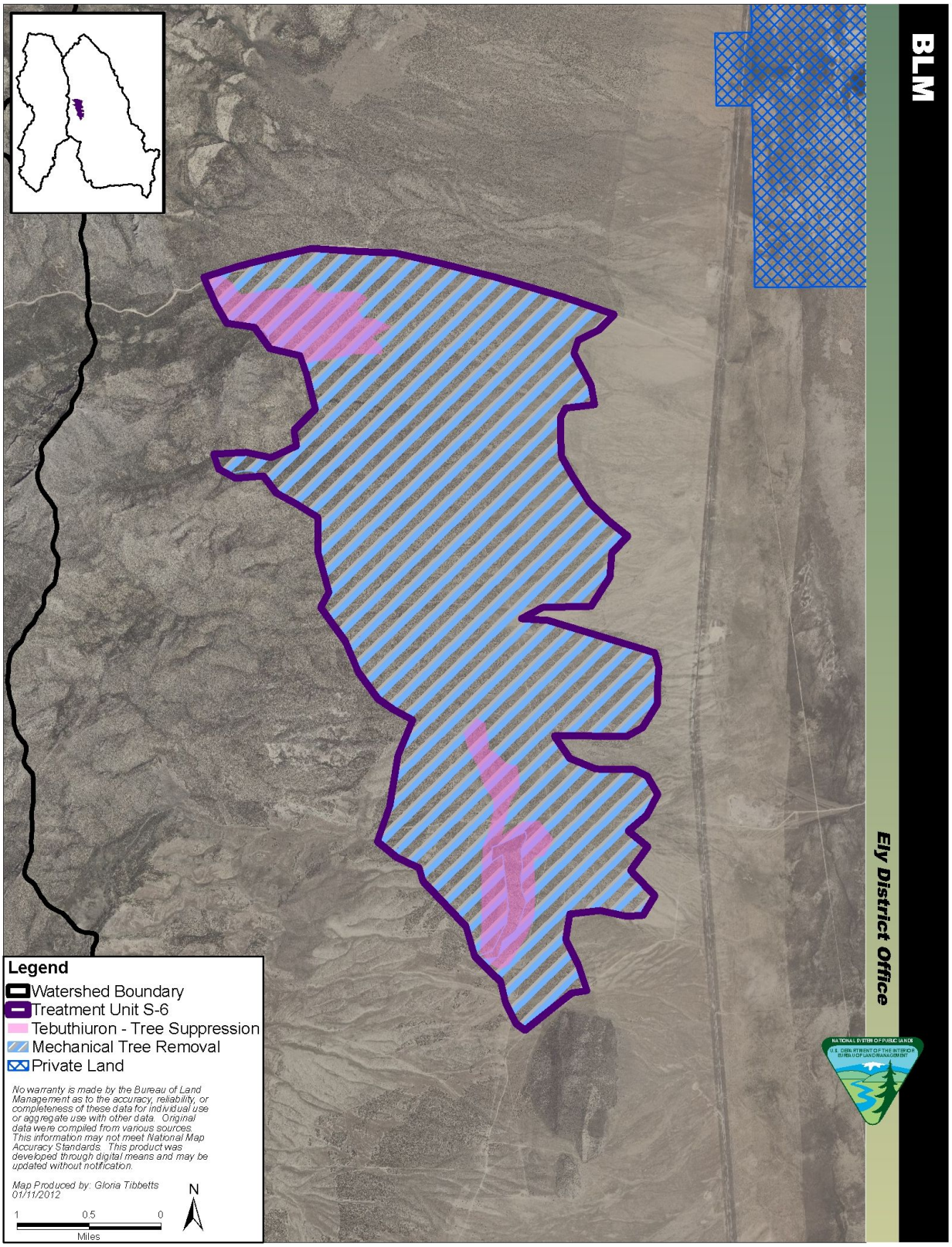
Map A.10. Treatment Unit S-5 — Alternative B: Reduced Ground Disturbance

A.1.6. Treatment Unit S-6

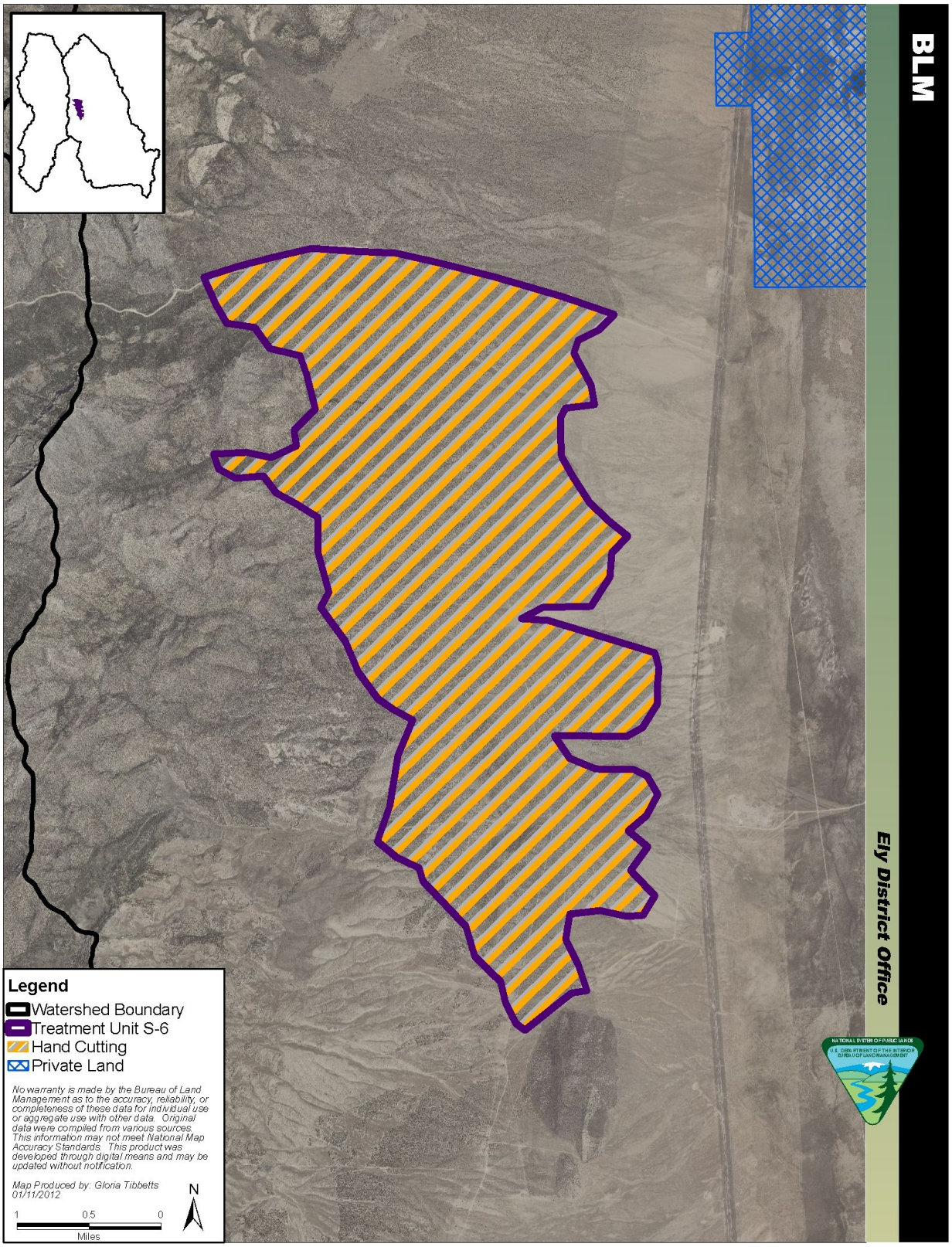
Treatment Unit S-6 consists of a total of 5,792 acres and 60-75% of that area, or approximately 3,475-4,344 acres, would be targeted for treatment.

Table A.6. Vegetation Types for Treatment Unit S-6

Target Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Sagebrush	5,396	3,238	4,047
TOTALS	5,396	3,238	4,047
Incidental Treatment Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Pinyon-Juniper Woodlands	146	0	110
Avoidance Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Salt Desert Scrub	36	0	0
Riparian Wetlands	199	0	0



Map A.11. Treatment Unit S-6 — Alternative A: Proposed Action



Map A.12. Treatment Unit S-6 — Alternative B: Reduced Ground Disturbance

Appendix A Site-specific information for vegetation treatments and range improvements
Treatment Unit S-6

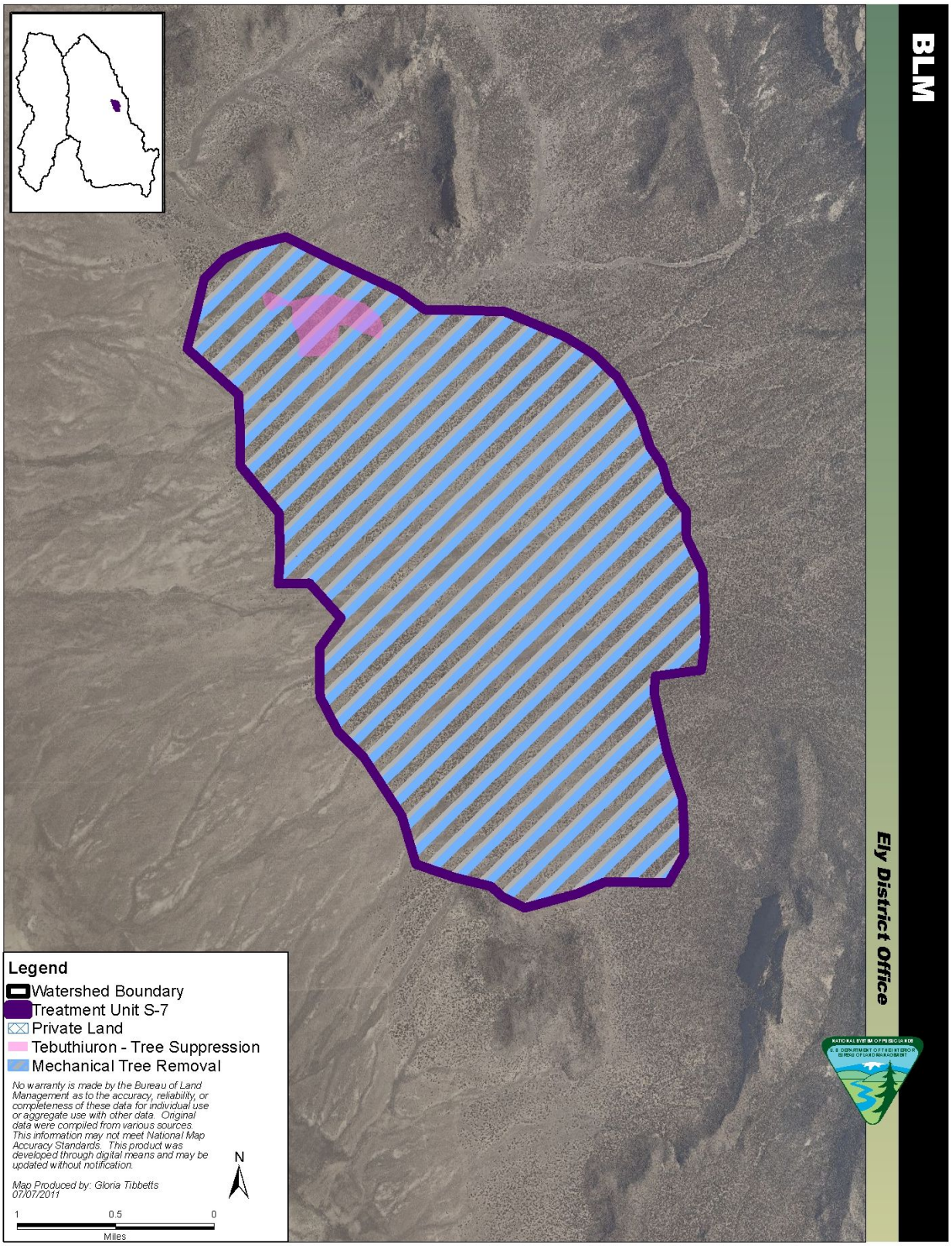
November 5, 2012

A.1.7. Treatment Unit S-7

Treatment Unit S-7 consists of a total of 3,600 acres and 60-75% of that area, or approximately 2,160-2,700 acres, would be targeted for treatment.

Table A.7. Vegetation Types for Treatment Unit S-7

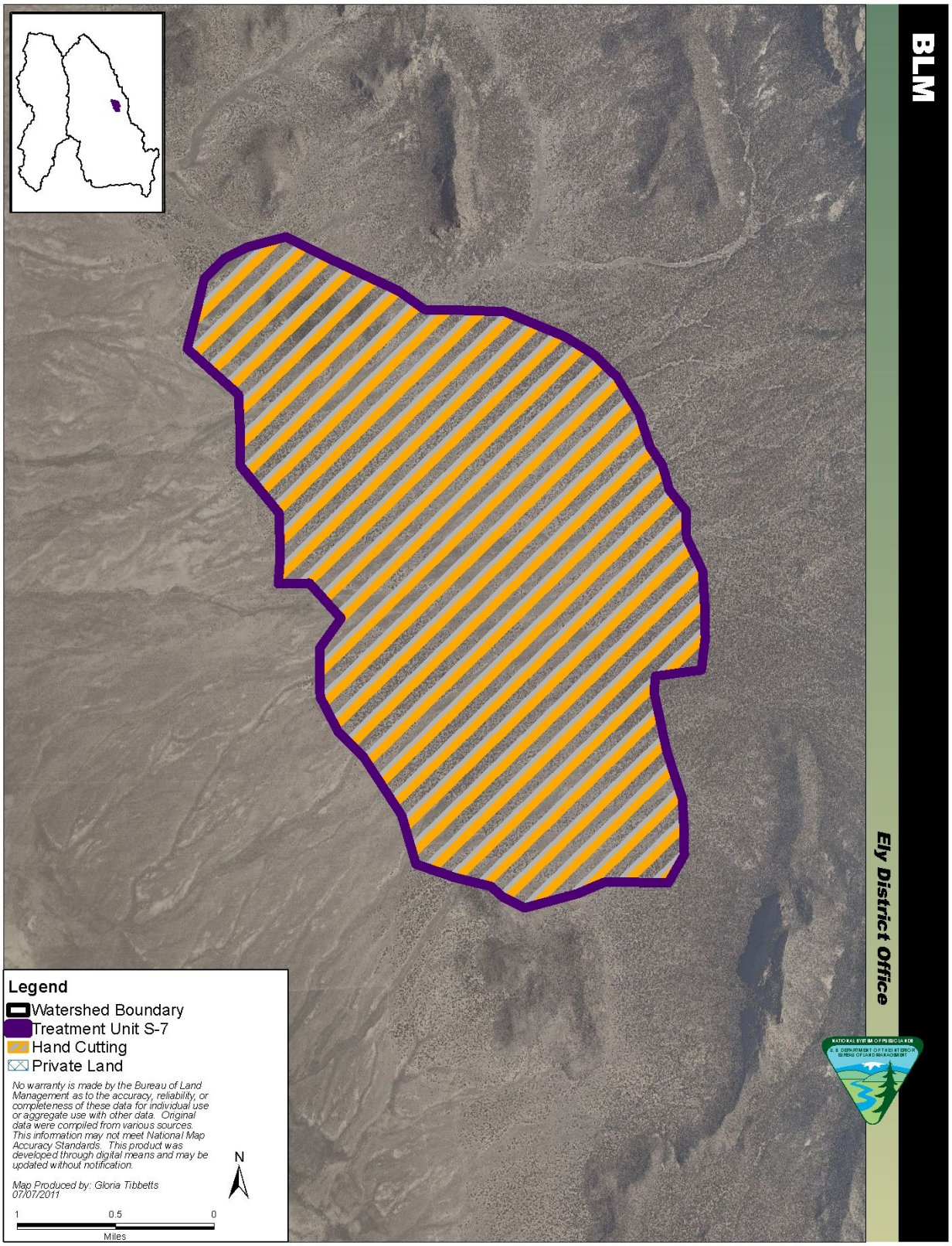
Target Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Sagebrush	1,910	1,146	1,433
TOTALS	1,910	1,146	1,433
Incidental Treatment Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Pinyon-Juniper Woodlands	21	0	16
Avoidance Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Salt Desert Scrub	2	0	0
Riparian Wetlands	104	0	0



Map A.13. Treatment Unit S-7 — Alternative A: Proposed Action

Appendix A Site-specific information for vegetation treatments and range improvements
Treatment Unit S-7

November 5, 2012



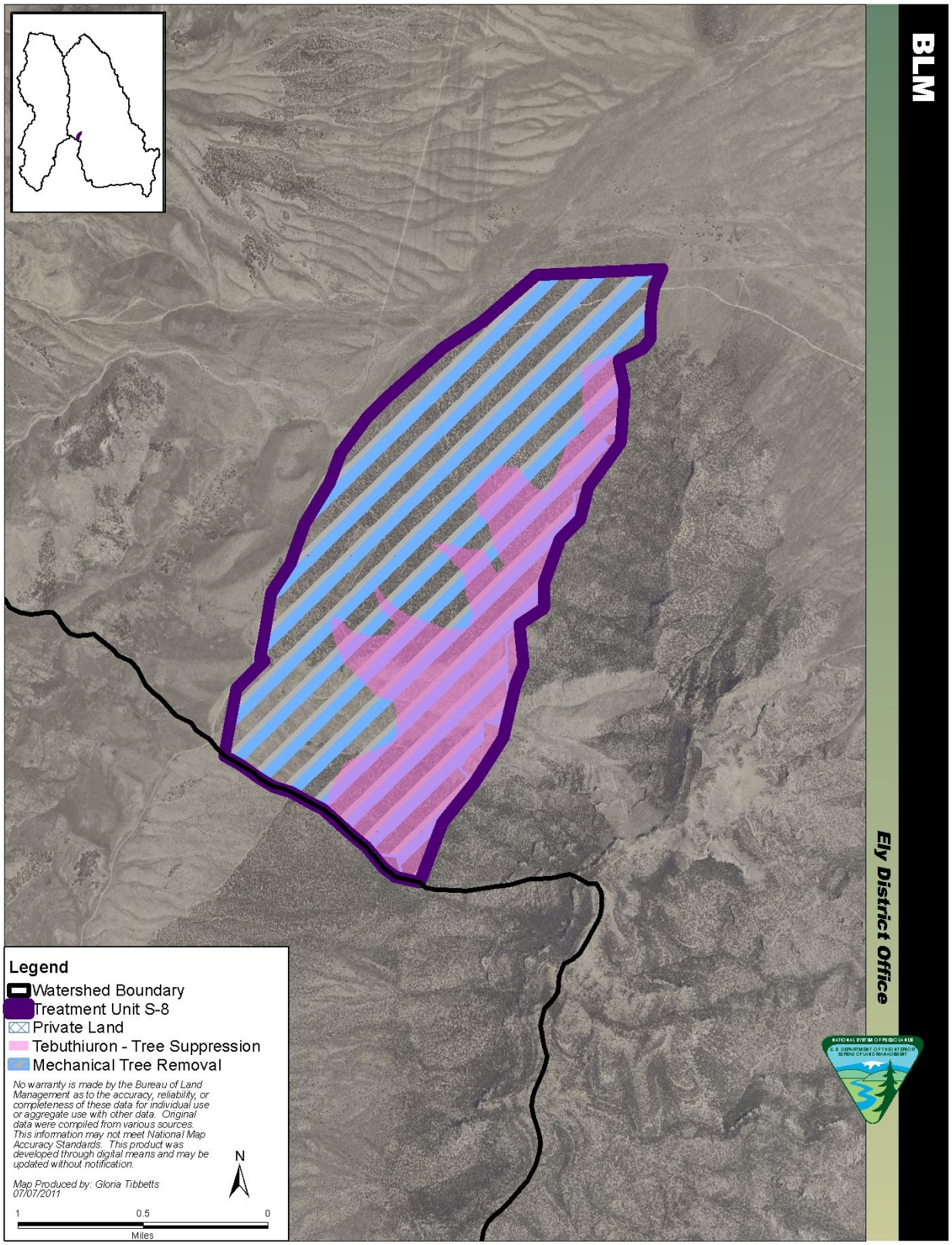
Map A.14. Treatment Unit S-7 — Alternative B: Reduced Ground Disturbance

A.1.8. Treatment Unit S-8

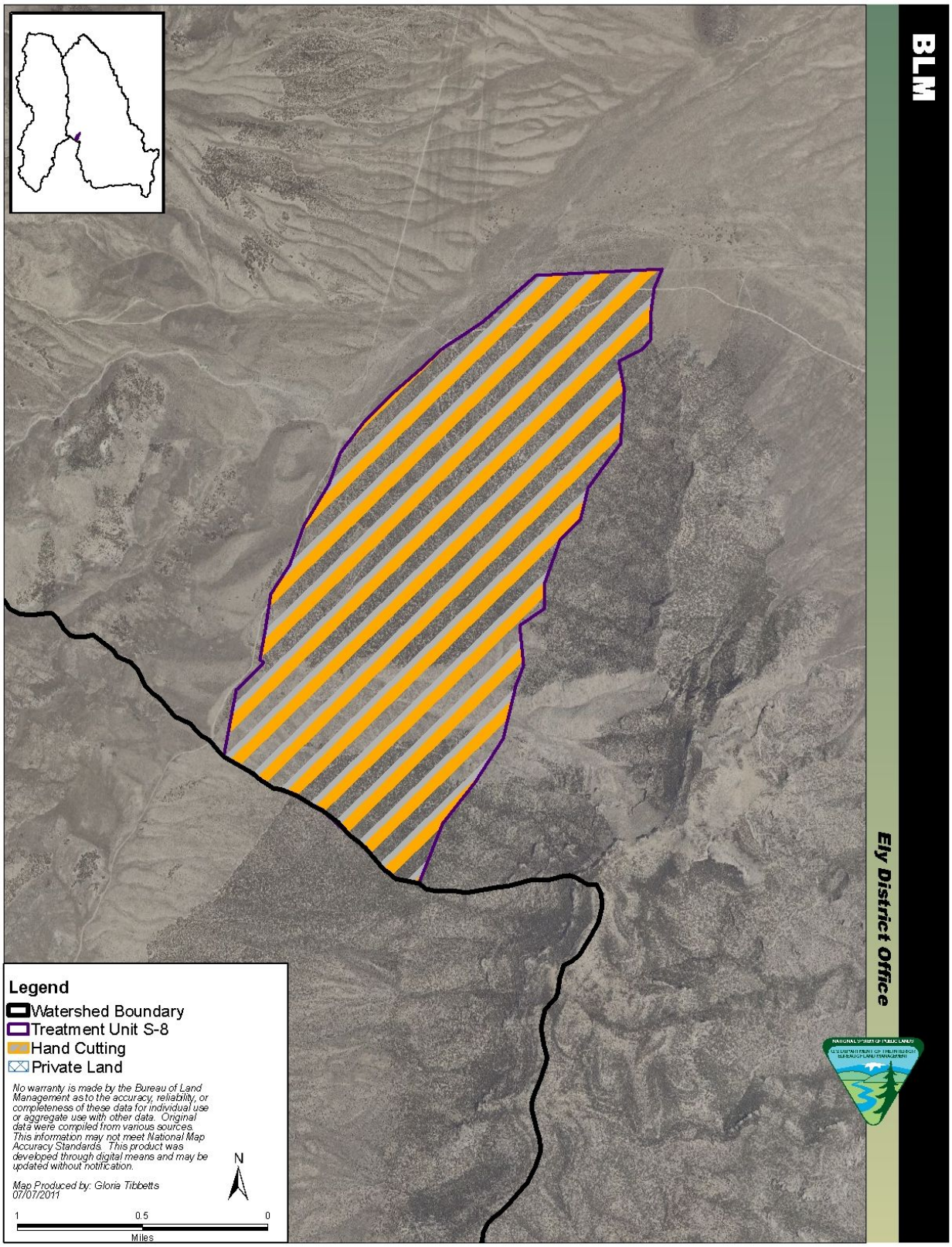
Treatment Unit S-8 consists of a total of 1,374 acres and 60-75% of that area, or approximately 824-1,030 acres, would be targeted for treatment.

Table A.8. Vegetation Types for Treatment Unit S-8

Target Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Sagebrush	1,273	764	955
TOTALS	1,273	764	955
Incidental Treatment Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Pinyon-Juniper Woodlands	12	0	9
Avoidance Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Mountain Mahogany	2	0	0
Riparian Wetlands	74	0	0



Map A.15. Treatment Unit S-8 — Alternative A: Proposed Action



Map A.16. Treatment Unit S-8 — Alternative B: Reduced Ground Disturbance

Appendix A Site-specific information for vegetation treatments and range improvements
Treatment Unit S-8

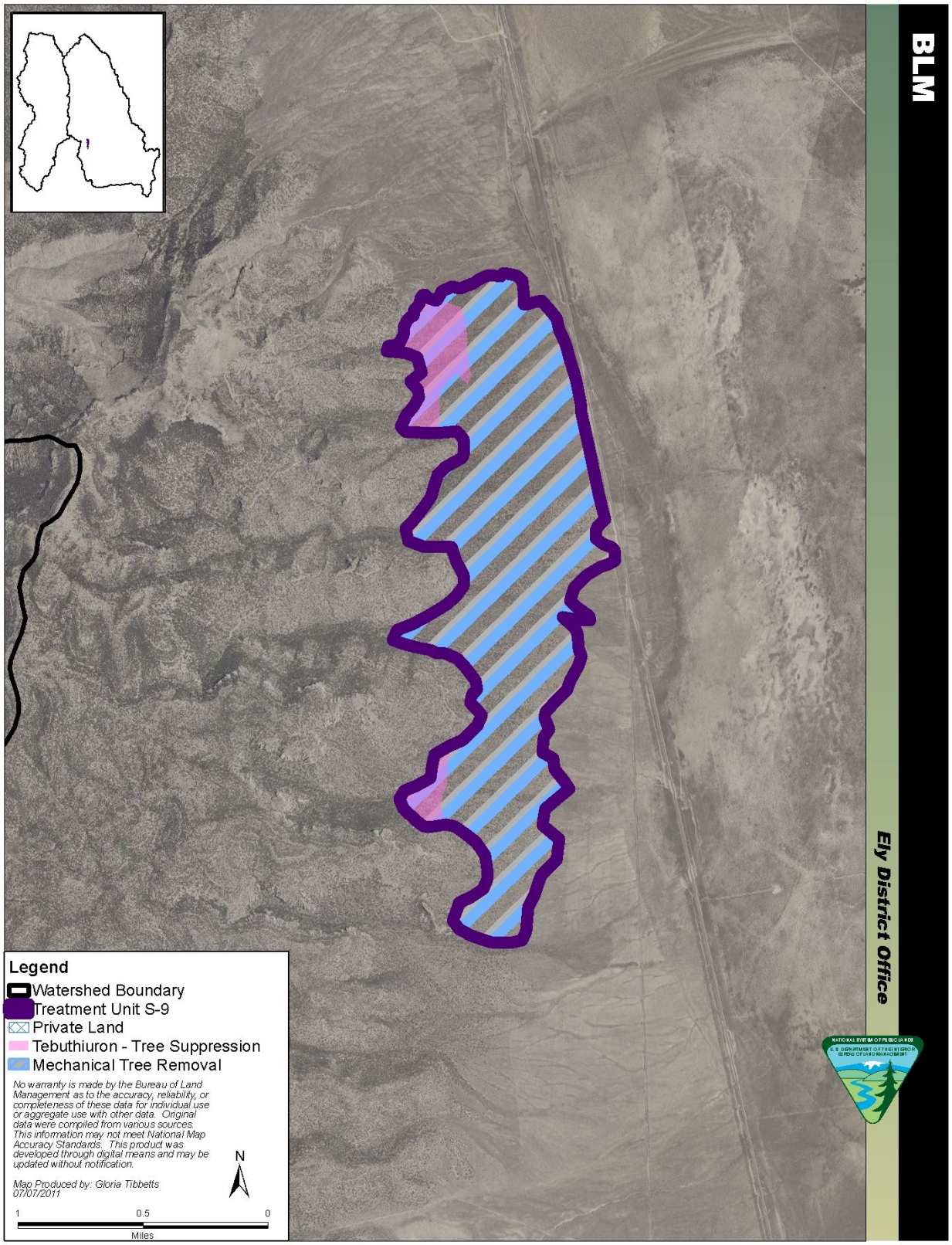
November 5, 2012

A.1.9. Treatment Unit S-9

Treatment Unit S-9 consists of a total of 859 acres and 60-75% of that area, or approximately 515-644 acres, would be targeted for treatment.

Table A.9. Vegetation Types for Treatment Unit S-9

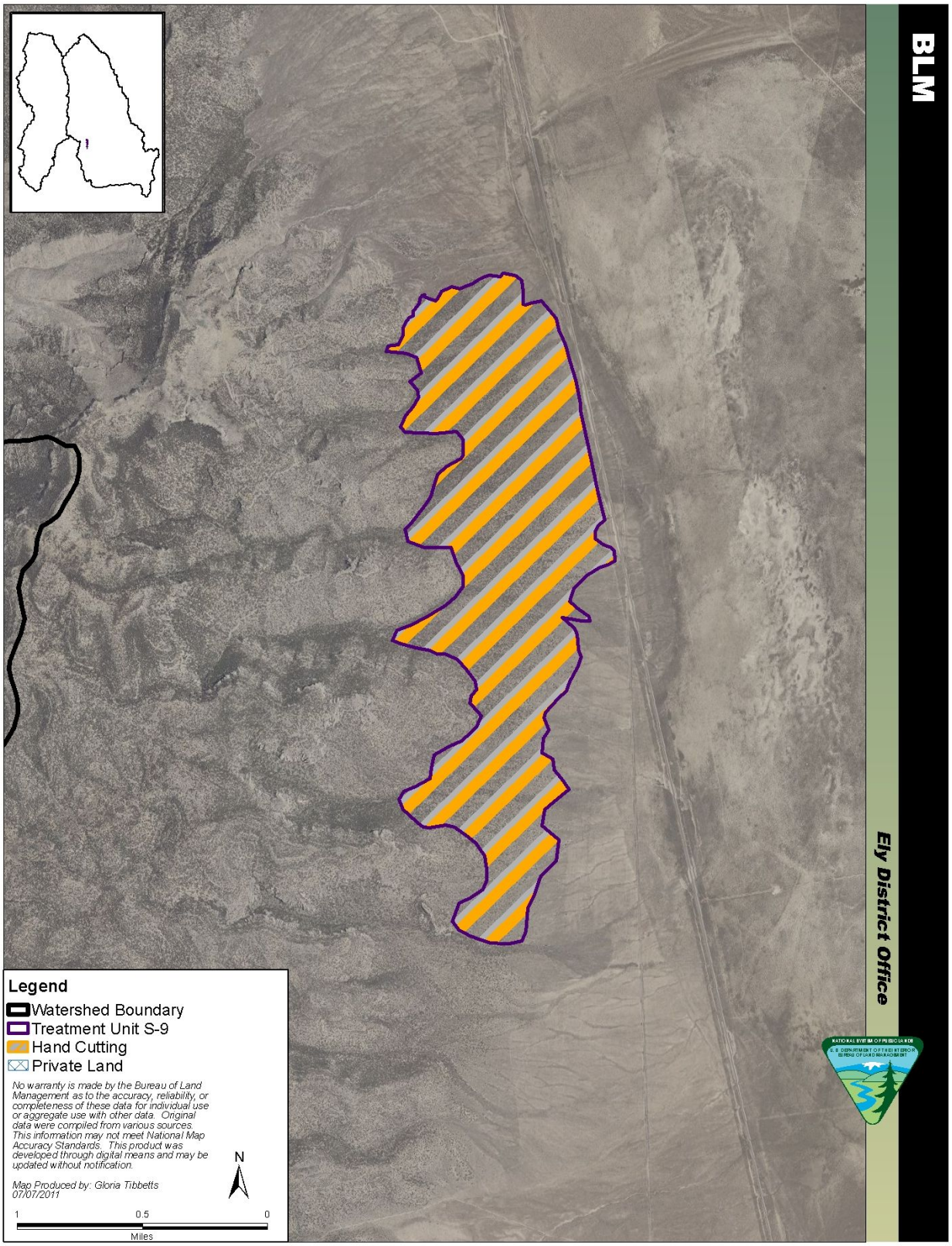
Target Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Sagebrush	821	493	616
TOTALS	821	493	616
Incidental Treatment Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Pinyon-Juniper Woodlands	6	0	5
Avoidance Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Mountain Mahogany	2	0	0
Riparian Wetlands	27	0	0



Map A.17. Treatment Unit S-9 — Alternative A: Proposed Action

Appendix A Site-specific information for vegetation treatments and range improvements
Treatment Unit S-9

November 5, 2012



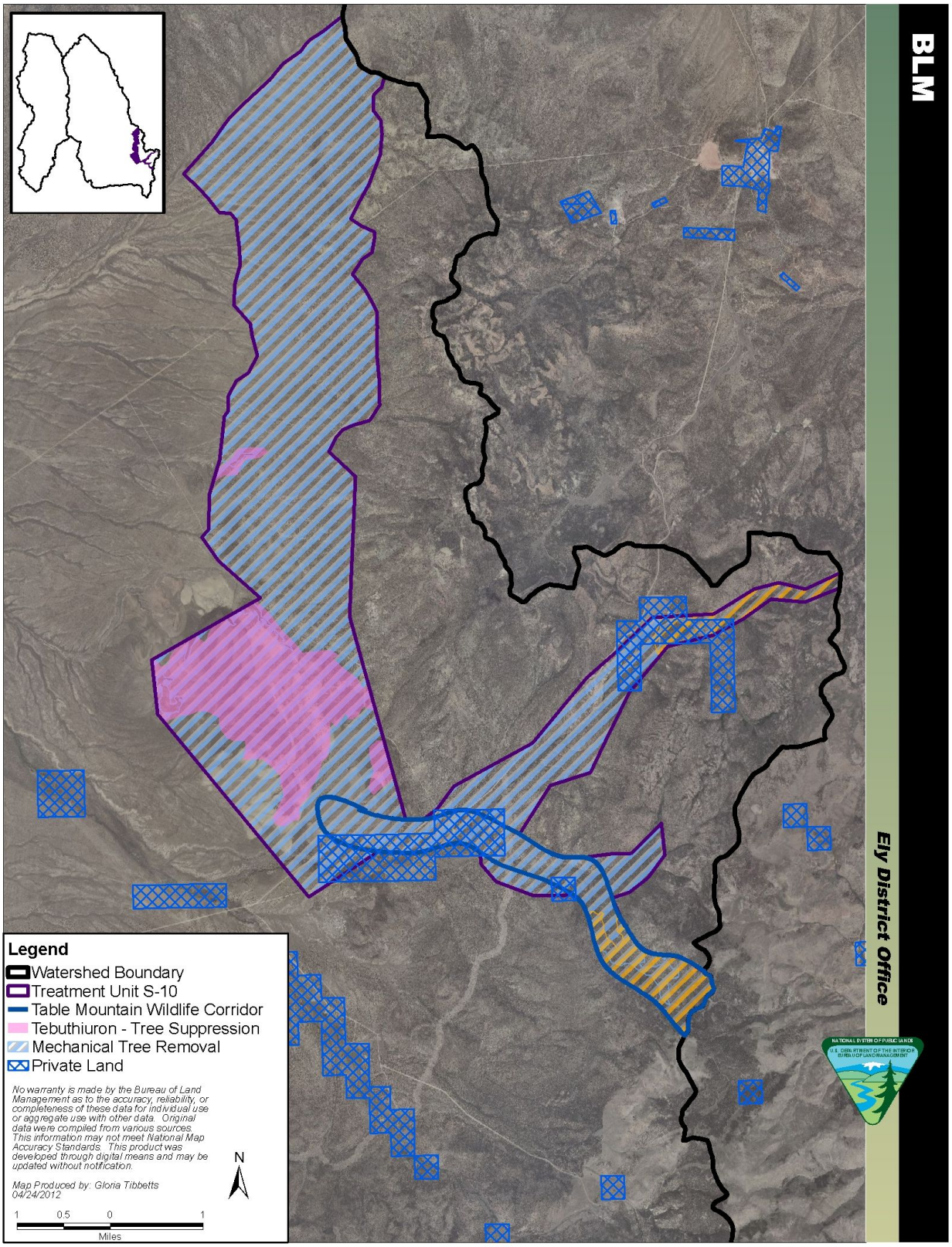
Map A.18. Treatment Unit S-9 — Alternative B: Reduced Ground Disturbance

A.1.10. Treatment Unit S-10

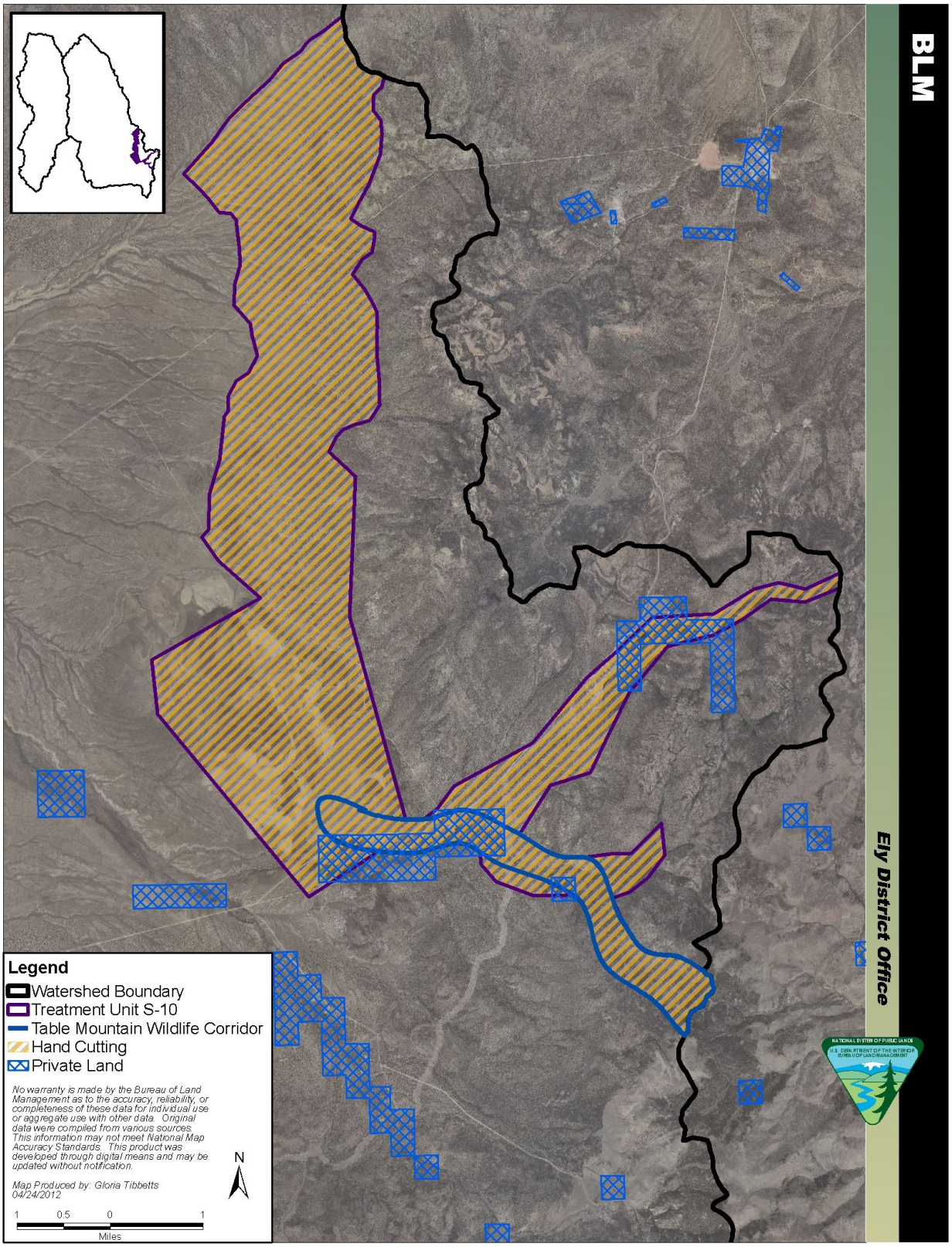
Treatment Unit S-10 consists of a total of 11,632 acres and 60-75% of that area, or approximately 6,979-8,724 acres, would be targeted for treatment.

Table A.10. Vegetation Types for Treatment Unit S-10

Target Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Sagebrush	8,532	5,119	6,399
TOTALS	8,532	5,119	6,399
Incidental Treatment Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Pinyon-Juniper Woodlands	483	0	362
Avoidance Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Salt Desert Scrub	24	0	0
Mountain Mahogany	108	0	0
High Elevation Conifer (Mixed Conifer)	4	0	0
Riparian Wetlands	563	0	0



Map A.19. Treatment Unit S-10 — Alternative A: Proposed Action



Map A.20. Treatment Unit S-10 — Alternative B: Reduced Ground Disturbance

Appendix A Site-specific information for vegetation treatments and range improvements
Treatment Unit S-10

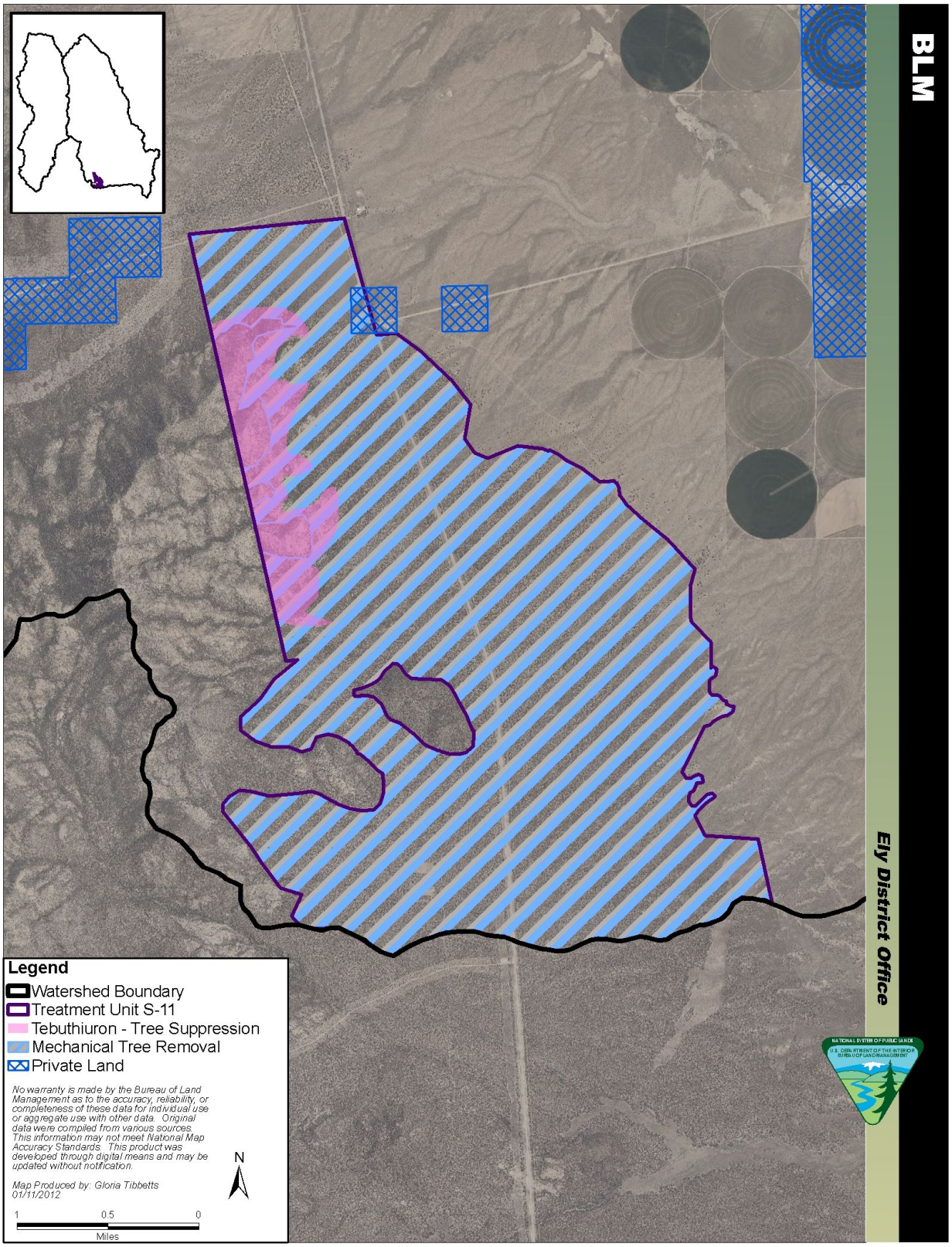
November 5, 2012

A.1.11. Treatment Unit S-11

Treatment Unit S-11 consists of a total of 4,716 acres and 60-75% of that area, or approximately 2,830-3,537 acres, would be targeted for treatment.

Table A.11. Vegetation Types for Treatment Unit S-11

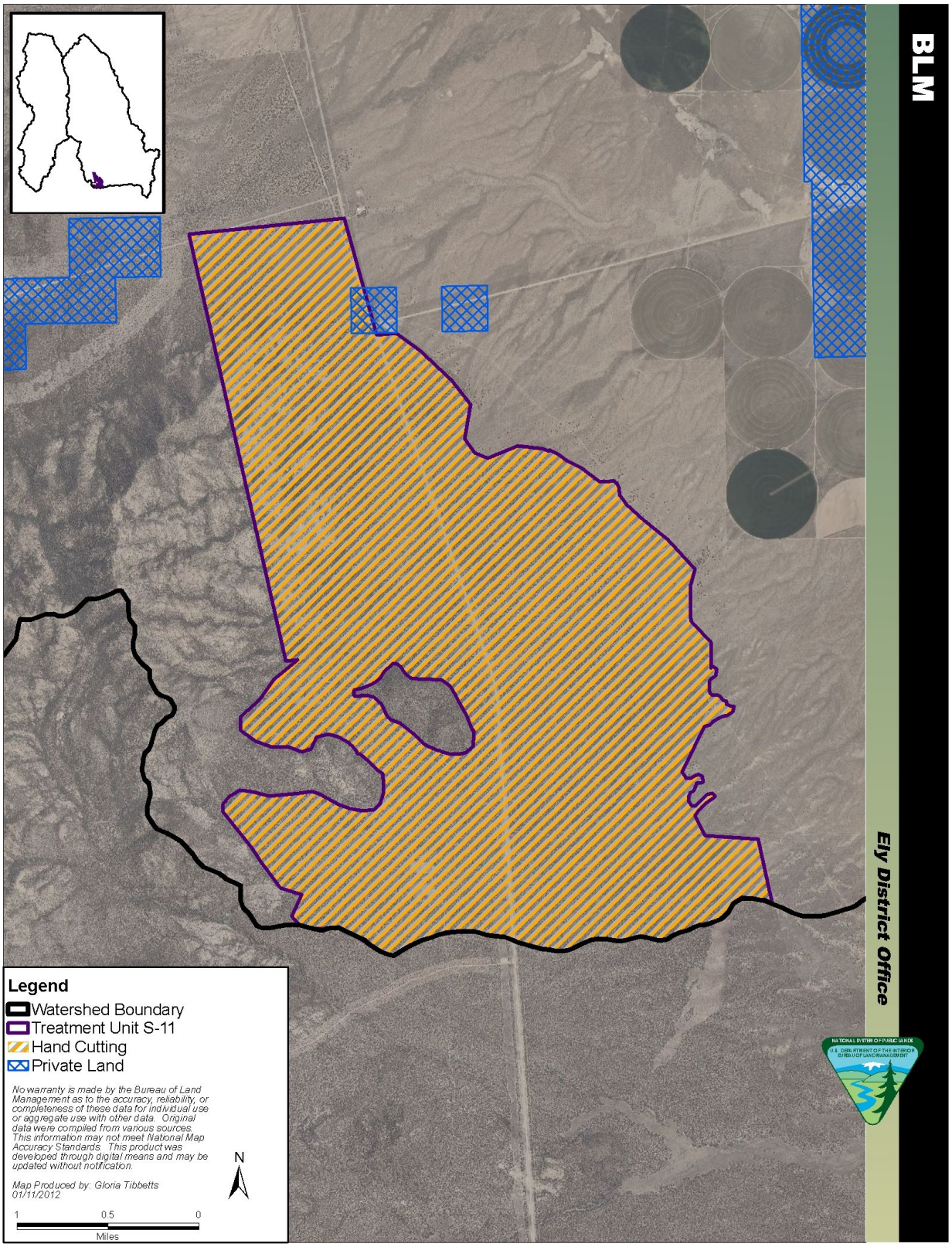
Target Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Sagebrush	4,216	2,530	3,162
TOTALS	4,216	2,530	3,162
Incidental Treatment Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Pinyon-Juniper Woodlands	144	0	108
Avoidance Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Riparian Wetlands	335	0	0



Map A.21. Treatment unit S-11 — Alternative A: Proposed Action

Appendix A Site-specific information for vegetation treatments and range improvements
Treatment Unit S-11

November 5, 2012



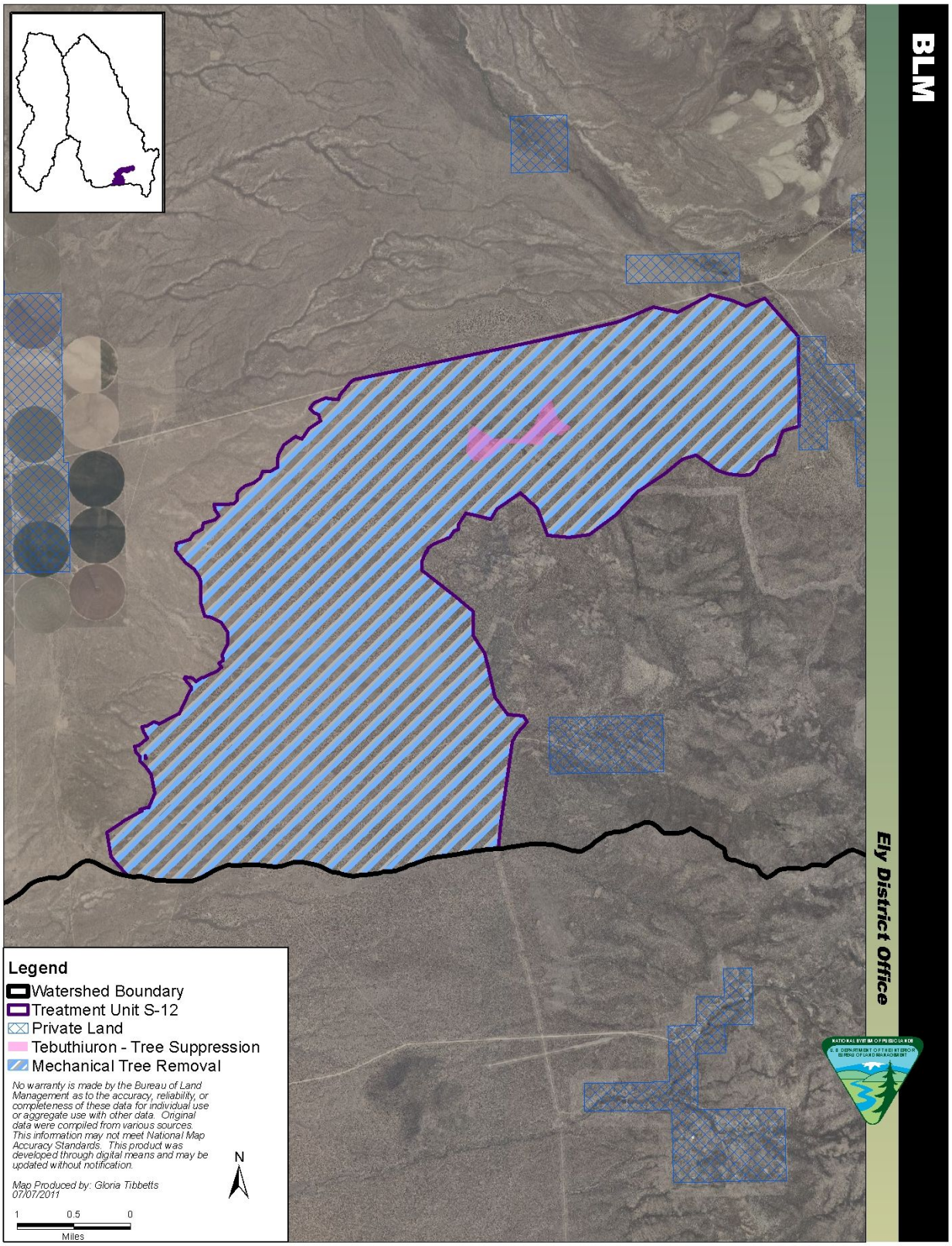
Map A.22. Treatment Unit S-11 — Alternative B: Reduced Ground Disturbance

A.1.12. Treatment Unit S-12

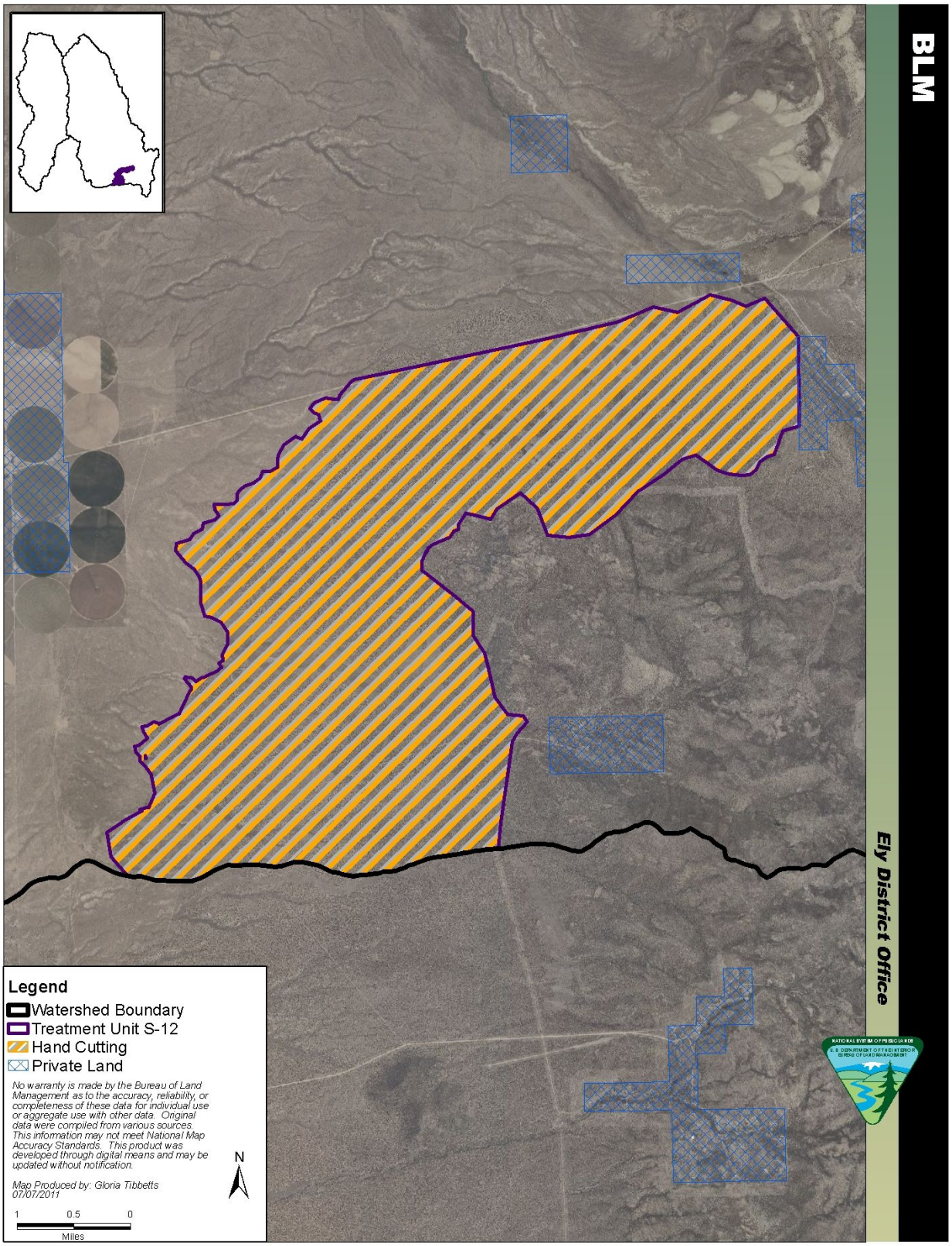
Treatment Unit S-12 consists of a total of 9,595 acres and 60-75% of that area, or approximately 5,757-7,196 acres, would be targeted for treatment.

Table A.12. Vegetation Types for Treatment Unit S-12

Target Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Sagebrush	9,114	5,468	6,836
TOTALS	9,114	5,468	6,836
Incidental Treatment Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Pinyon-Juniper Woodlands	20	0	18
Avoidance Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Salt Desert Scrub	3	0	0
Riparian Wetlands	440	0	0



Map A.23. Treatment Unit S-12 — Alternative A: Proposed Action



Map A.24. Treatment Unit S-12 — Alternative B: Reduced Ground Disturbance

Appendix A Site-specific information for vegetation treatments and range improvements
Treatment Unit S-12

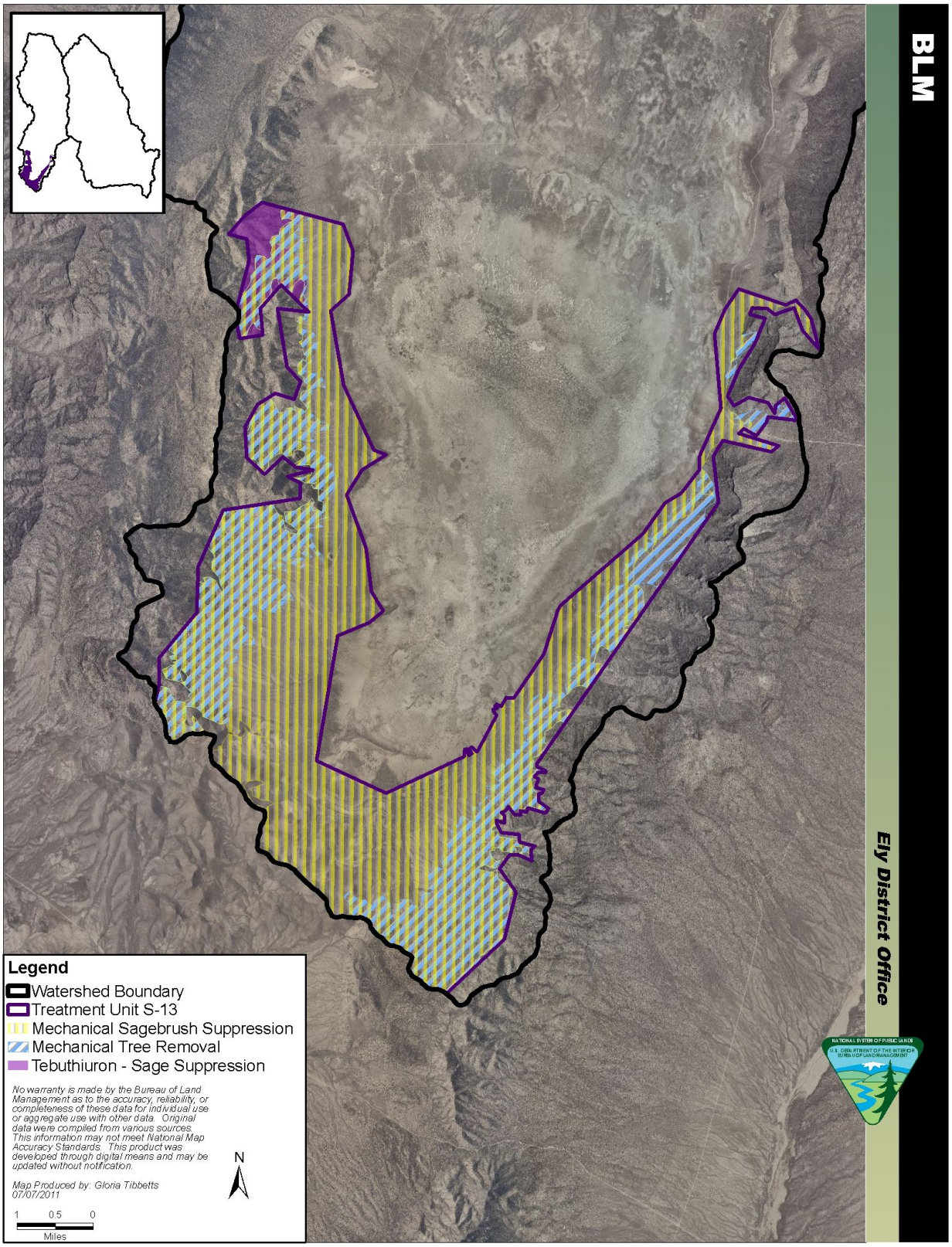
November 5, 2012

A.1.13. Treatment Unit S-13

Treatment Unit S-13 consists of a total of 14,903 acres and 60-75% of that area, or approximately 8,942-11,177 acres, would be targeted for treatment.

Table A.13. Vegetation Types for Treatment Unit S-13

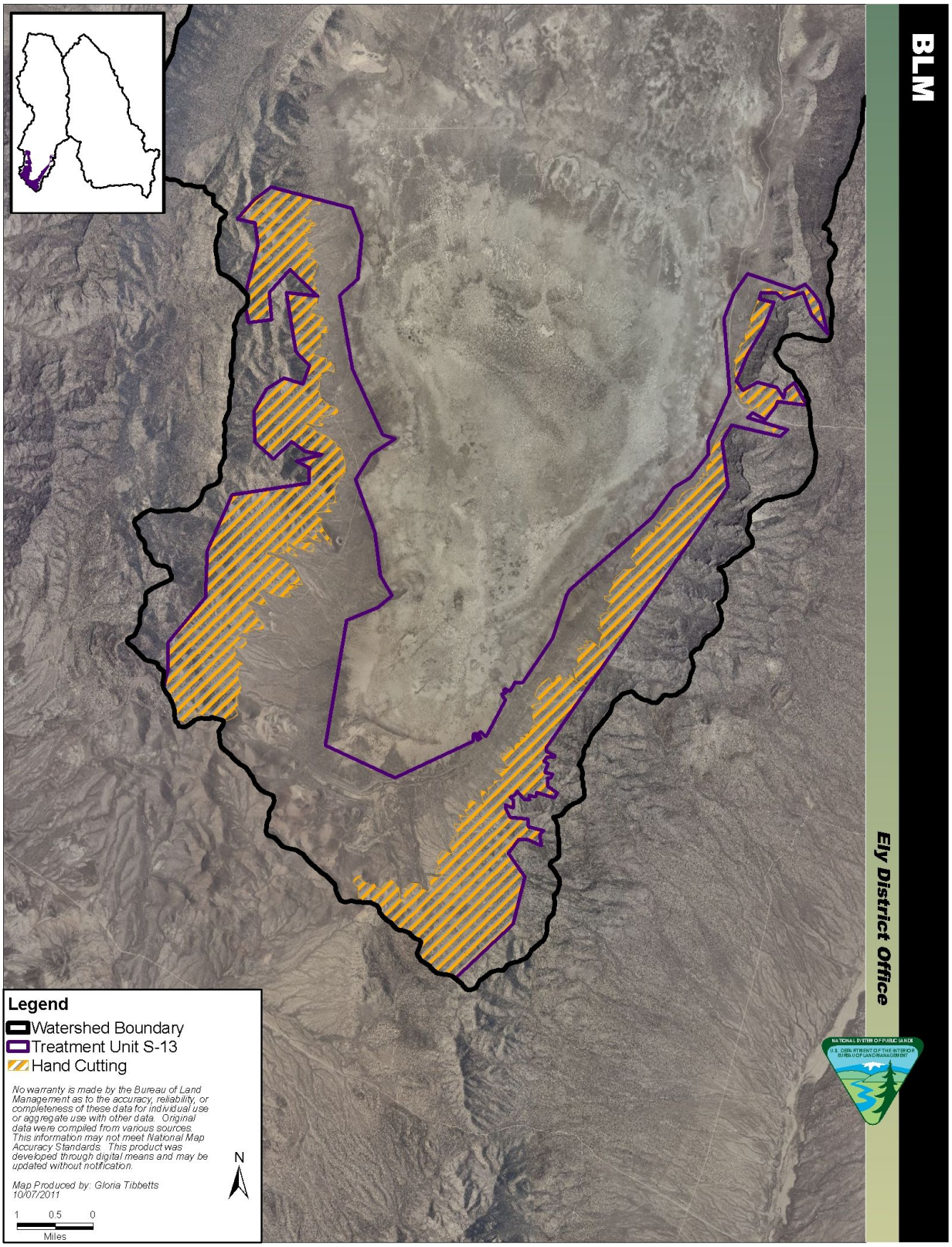
Target Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Sagebrush	13,474	8,084	10,105
TOTALS	13,474	8,084	10,105
Incidental Treatment Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Pinyon-Juniper Woodlands	671	0	503
Avoidance Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Salt Desert Scrub	339	0	0
Riparian Wetlands	176	0	0



Map A.25. Treatment Unit S-13 — Alternative A: Proposed Action

Appendix A Site-specific information for vegetation treatments and range improvements
Treatment Unit S-13

November 5, 2012



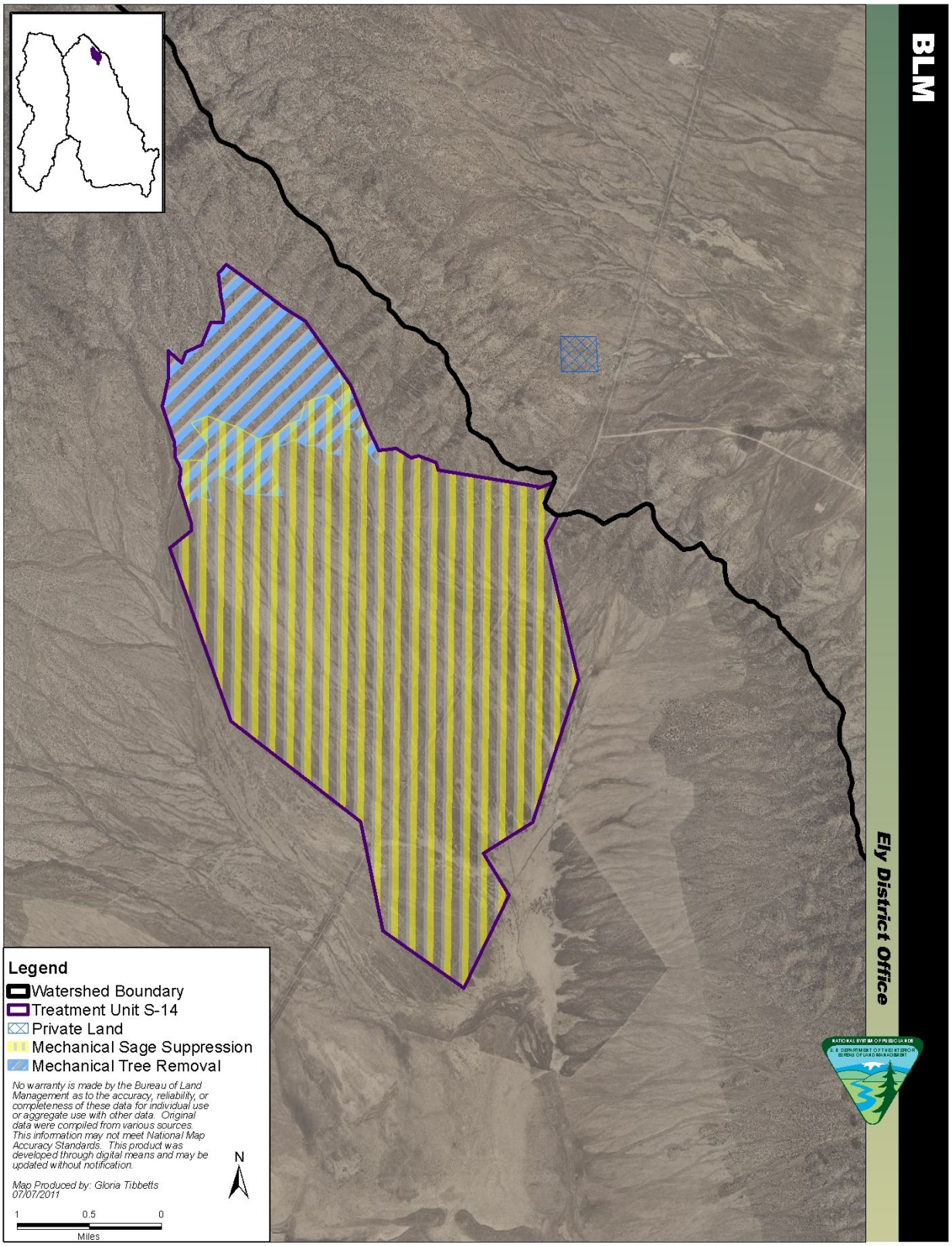
Map A.26. Treatment Unit S-13 — Alternative B: Reduced Ground Disturbance

A.1.14. Treatment Unit S-14

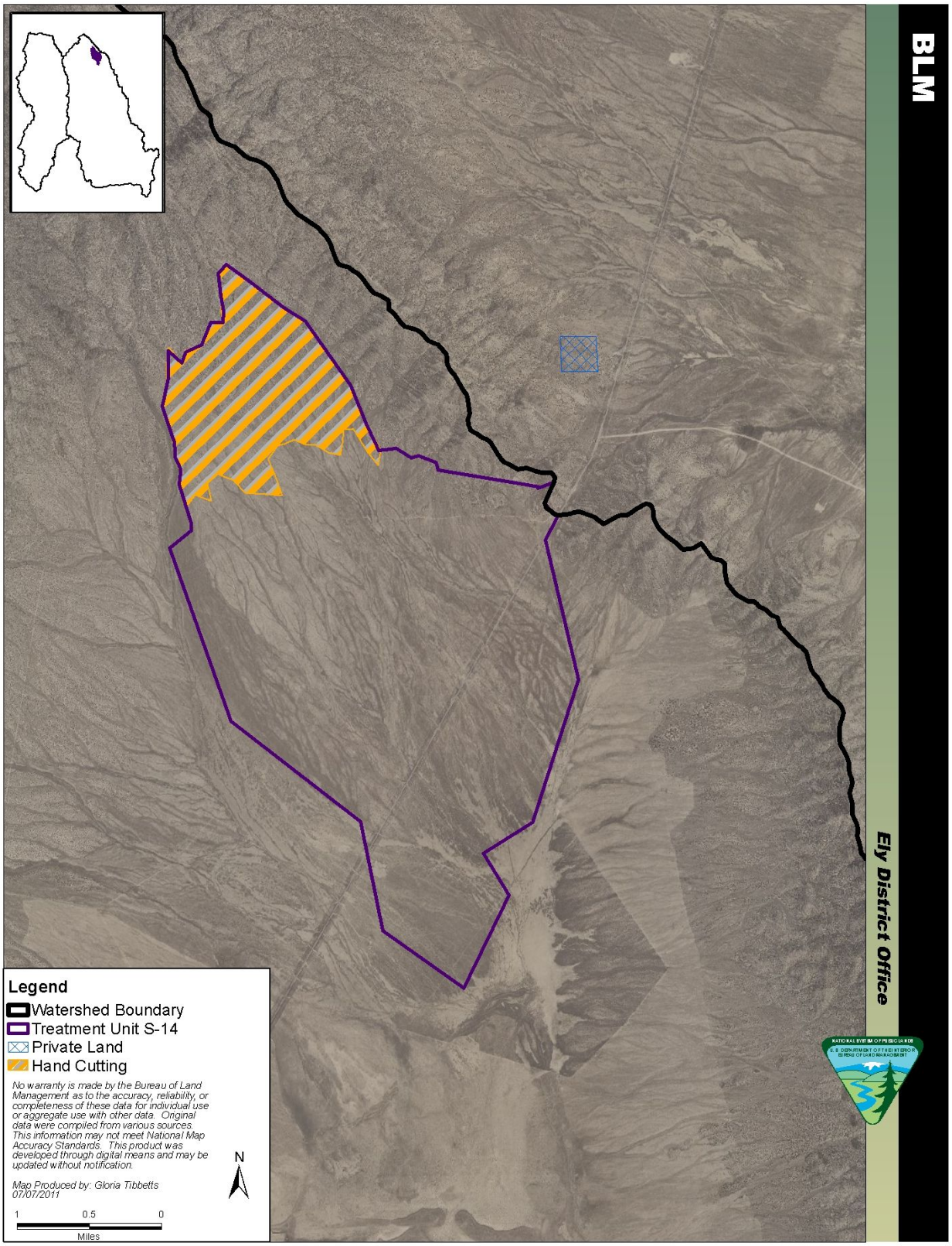
Treatment Unit S-14 consists of a total of 5,029 acres and 60-75% of that area, or approximately 3,017-3,771 acres, would be targeted for treatment.

Table A.14. Vegetation Types for Treatment Unit S-14

Target Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Sagebrush	4,716	2,830	3,537
TOTALS	4,716	2,830	3,537
Incidental Treatment Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Pinyon-Juniper Woodlands	1	0	1
Avoidance Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Salt Desert Scrub	284	0	0
Riparian Wetlands	18	0	0



Map A.27. Treatment Unit S-14 — Alternative A: Proposed Action



Map A.28. Treatment Unit S-14 — Alternative B: Reduced Ground Disturbance

Appendix A Site-specific information for vegetation treatments and range improvements
Treatment Unit S-14

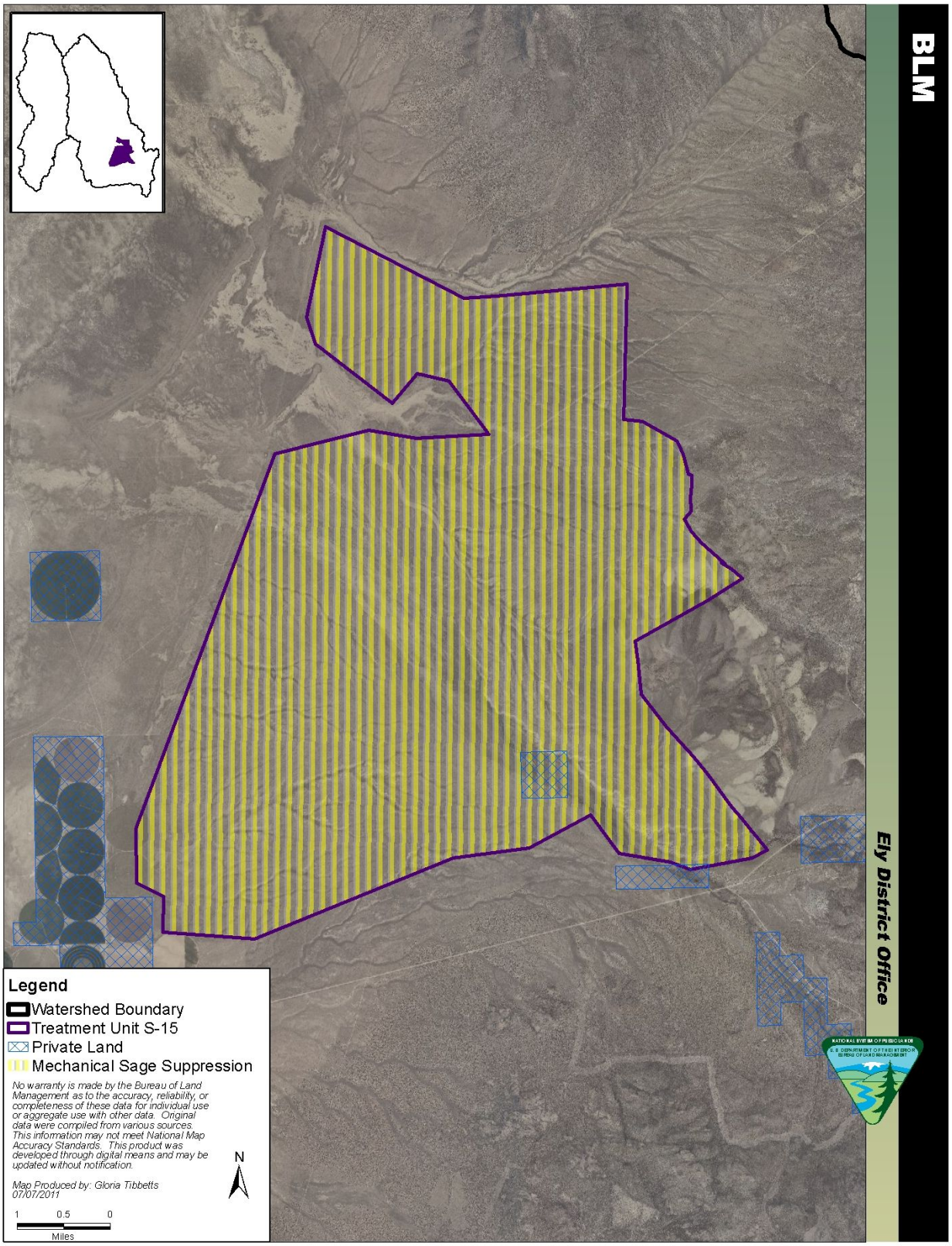
November 5, 2012

A.1.15. Treatment Unit S-15

Treatment Unit S-15 consists of a total of 19,421 acres and 60-75% of that area, or approximately 11,652-14,566 acres, would be targeted for treatment.

Table A.15. Vegetation Types for Treatment Unit S-15

Target Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Sagebrush	19,284	10,970	14,463
TOTALS	19,284	10,970	14,463
Incidental Treatment Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Pinyon-Juniper Woodlands	19	0	14
Avoidance Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Salt Desert Scrub	52	0	0
Riparian Wetlands	31	0	0



Map A.29. Treatment Unit S-15 — Alternative A: Proposed Action

Appendix A Site-specific information for vegetation treatments and range improvements
Treatment Unit S-15

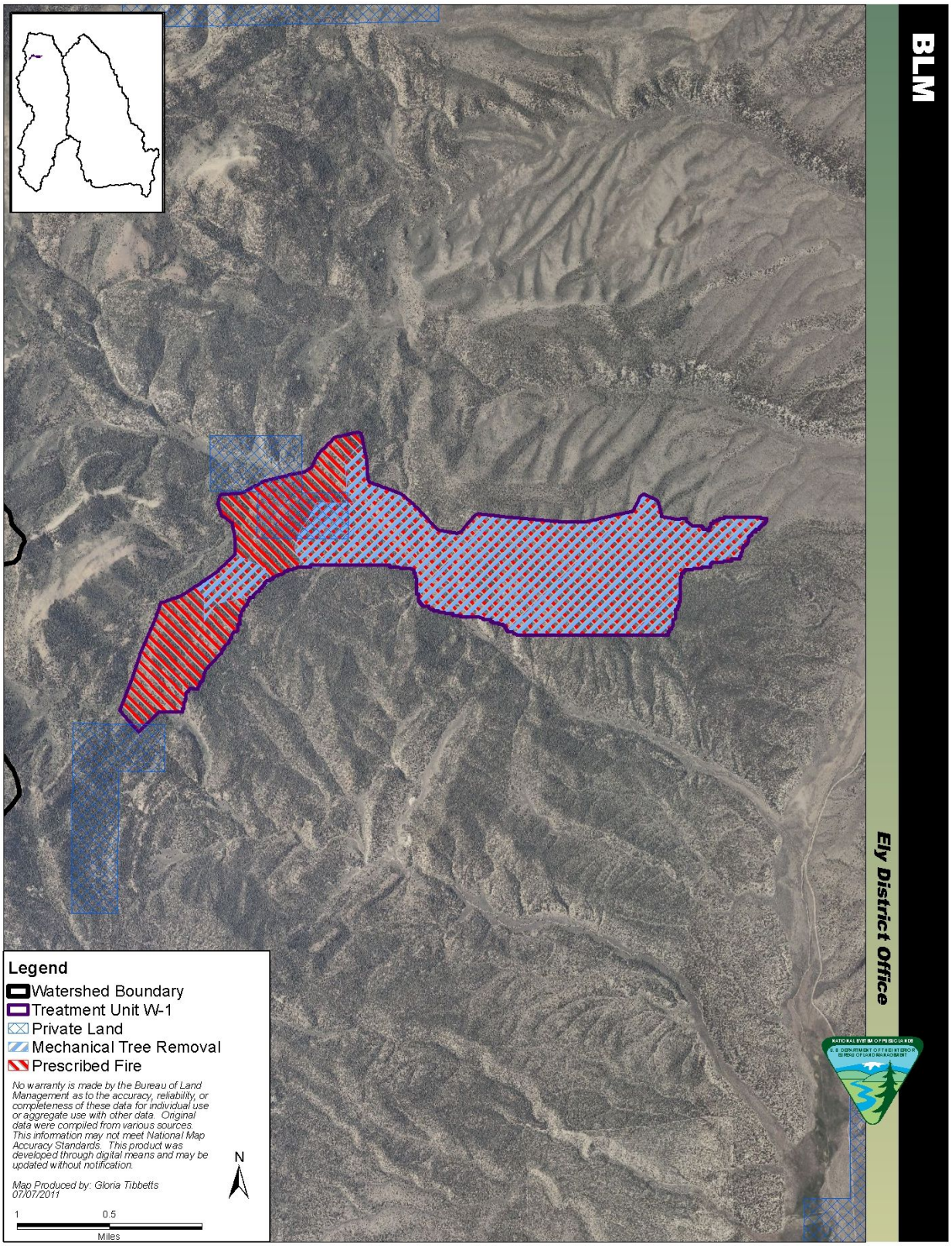
November 5, 2012

A.1.16. Treatment Unit W-1

Treatment Unit W-1 consists of a total of 1,145 acres and 40-60% of that area, or approximately 458-687 acres, would be targeted for treatment.

Table A.16. Vegetation Types for Treatment Unit W-1

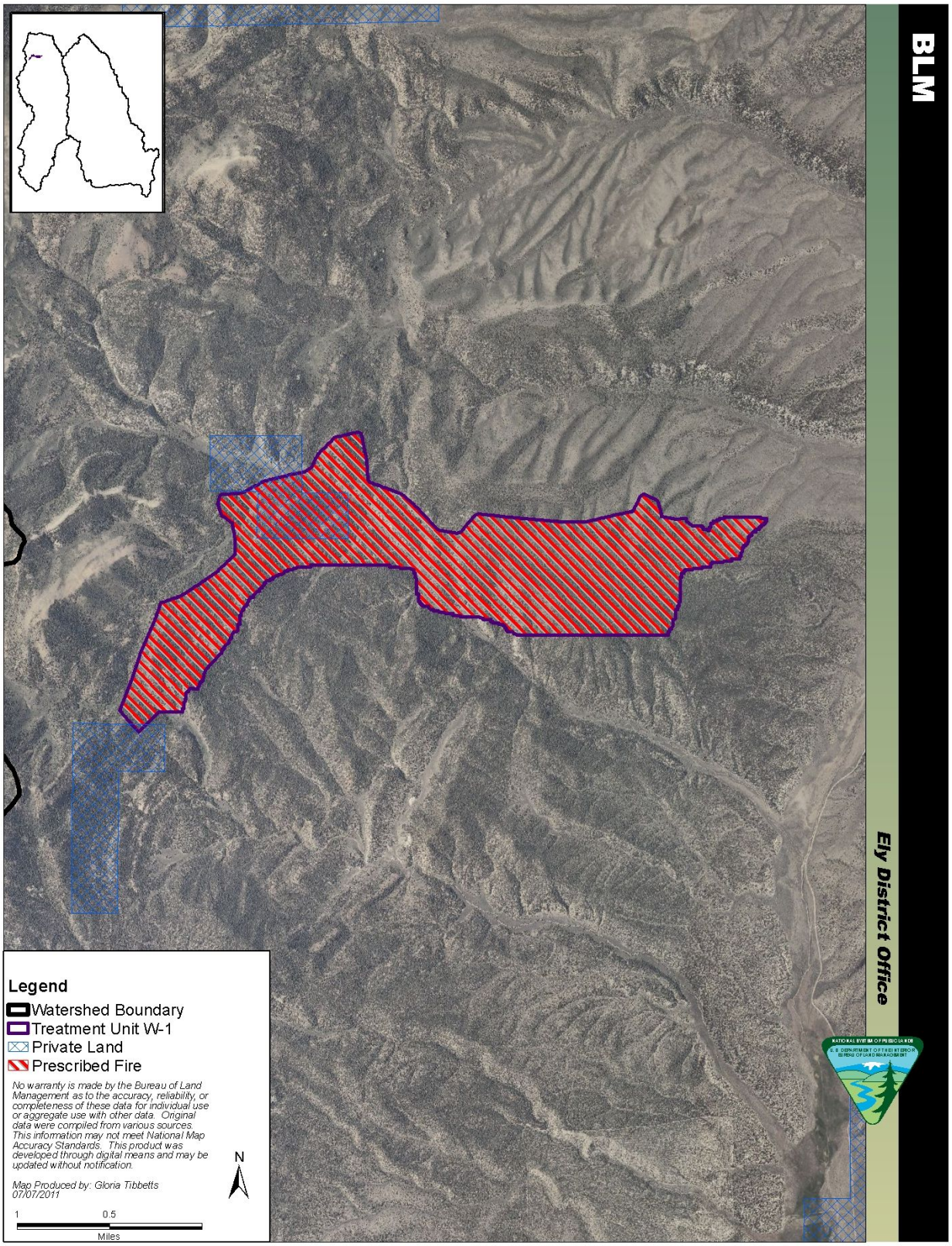
Target Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Pinyon-Juniper Woodlands	599	240	359
Sagebrush	481	191	289
TOTALS	1,080	431	648
Incidental Treatment Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Mountain Mahogany	36	0	22
Avoidance Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to exceed**
Riparian/Wetland	25	0	0



Map A.30. Treatment Unit W-1 — Alternative A: Proposed Action

Appendix A Site-specific information for vegetation treatments and range improvements
Treatment Unit W-1

November 5, 2012



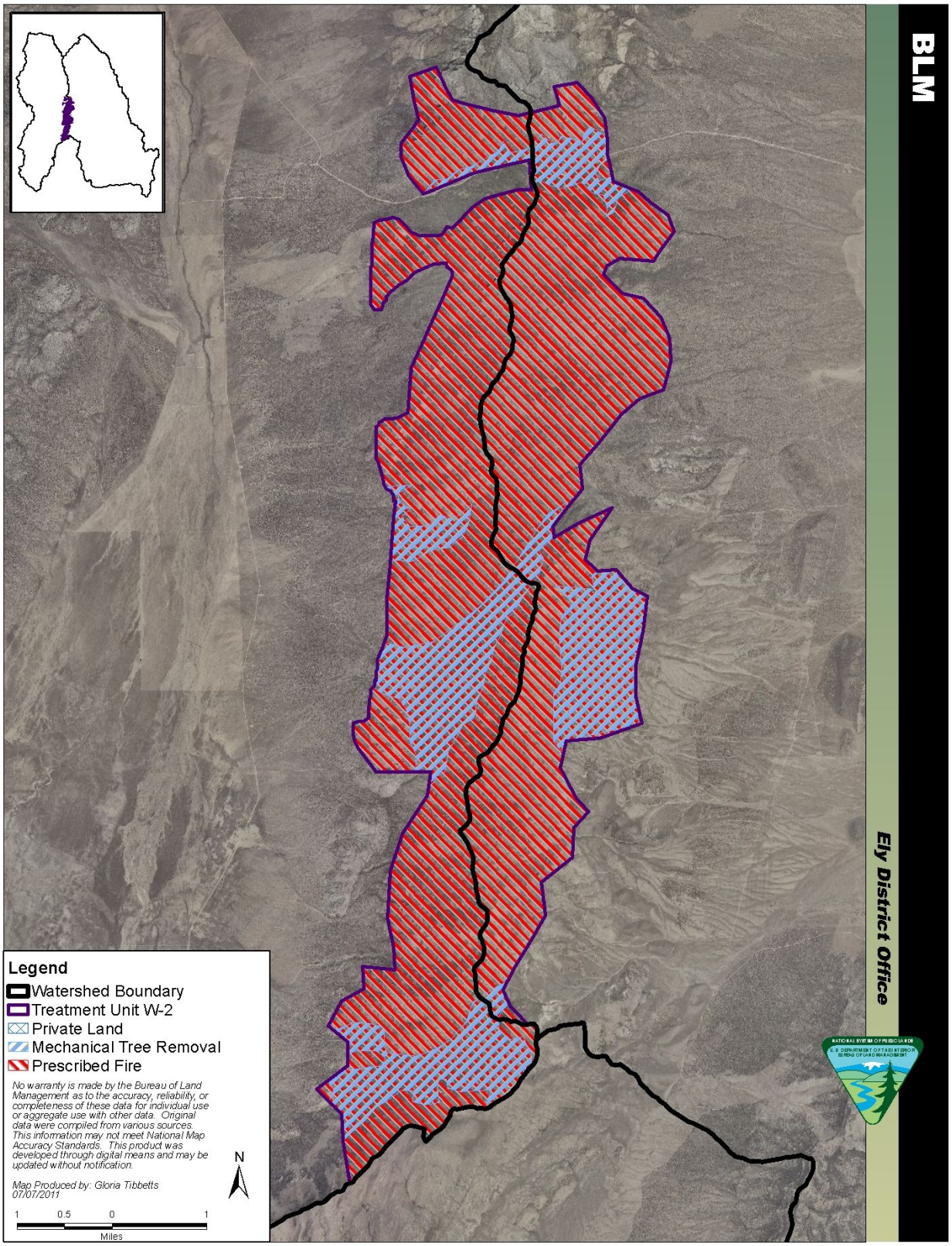
Map A.31. Treatment Unit W-1 — Alternative B: Reduced Ground Disturbance

A.1.17. Treatment Unit W-2

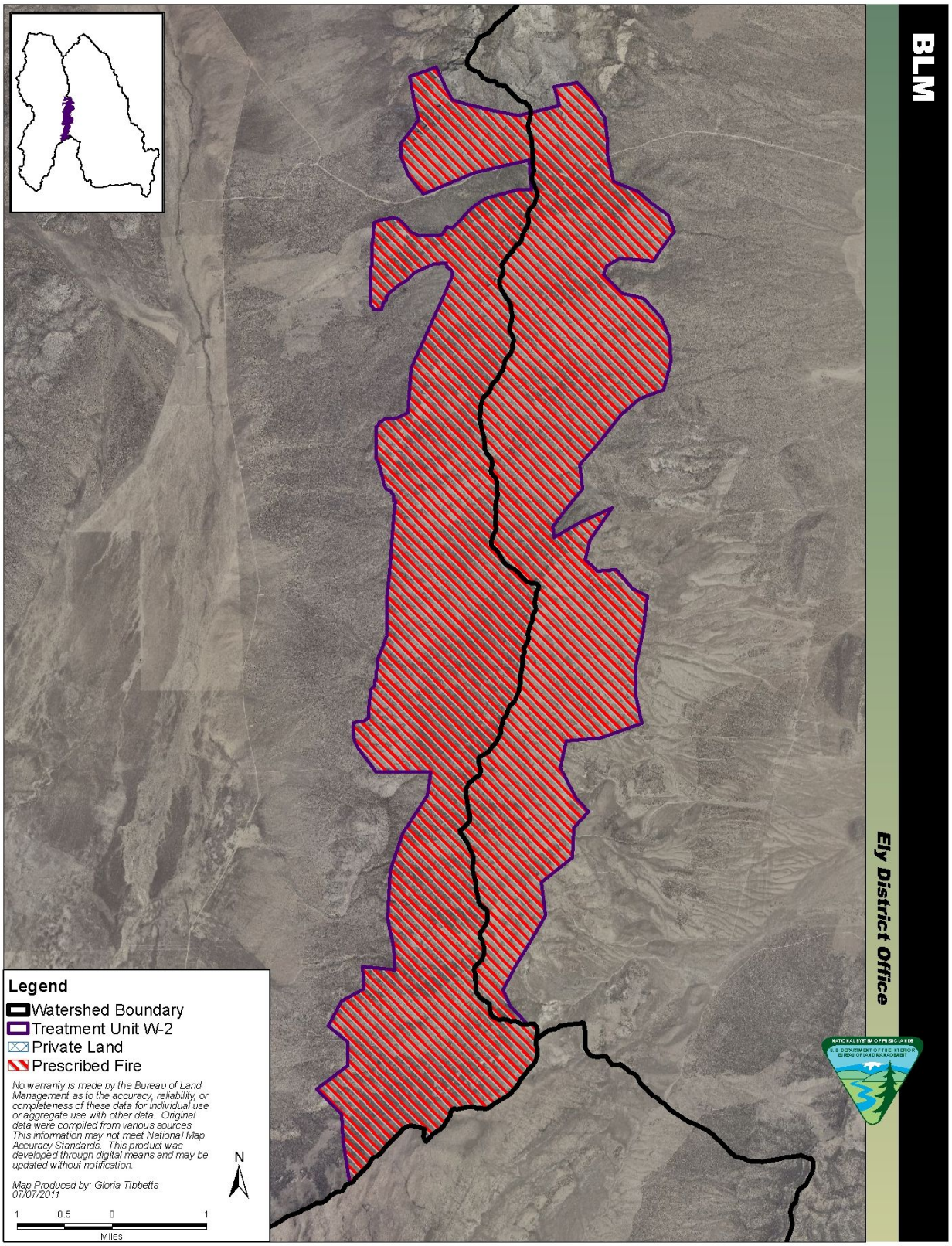
Treatment Unit W-2 consists of a total of 14,974 acres and approximately 40-60% of that area, or approximately 5,990-8,984 acres, would be targeted for treatment.

Table A.17. Vegetation Types for Treatment Unit W-2

Target Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Pinyon-Juniper Woodlands	7,207	2,883	4,324
Sagebrush	5,717	2,287	3,430
Mountain Mahogany	1,479	592	887
High Elevation Conifer (Mixed Conifer)	273	109	164
TOTALS	14,676	5,871	8,805
Incidental Treatment Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Aspen	38	0	23
Salt Desert Scrub	31	0	19
Avoidance Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to exceed**
High Elevation Conifer (Limber Pine, Bristlecone Pine)	2	0	0
Riparian/Wetland	232	0	0



Map A.32. Treatment Unit W-2 — Alternative A: Proposed Action



Map A.33. Treatment Unit W-2 — Alternative B: Reduced Ground Disturbance

Appendix A Site-specific information for vegetation treatments and range improvements
Treatment Unit W-2

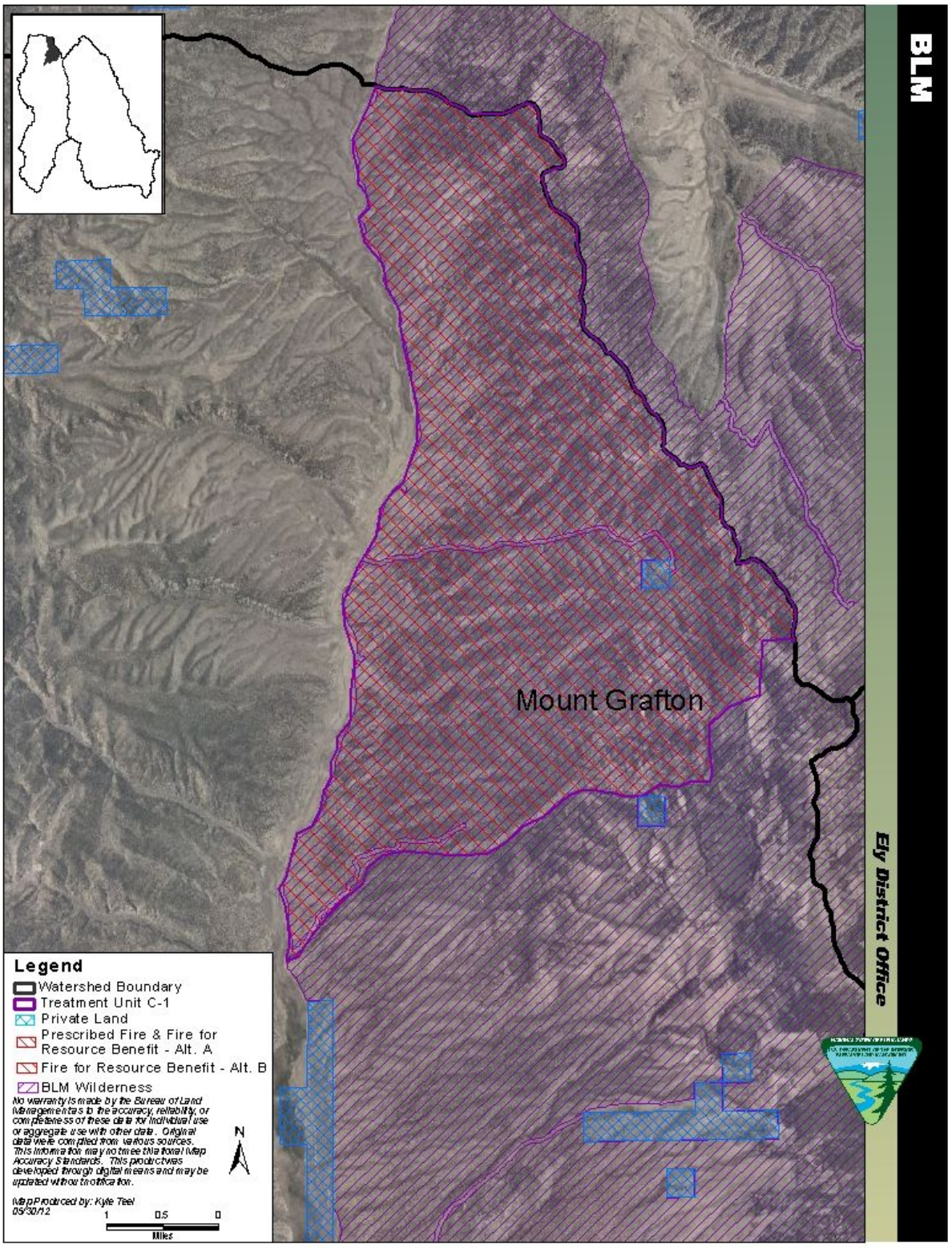
November 5, 2012

A.1.18. Treatment Unit C-1

Treatment Unit C-1 consists of a total of 11,215 acres and 40-60% of that area, or approximately 4,486-6,729 acres, would be targeted for treatment.

Table A.18. Vegetation Types for Treatment Unit C-1

Target Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Sagebrush	7,710	3,084	4,626
Pinyon-Juniper Woodlands	2,159	1,295	1,295
TOTALS	9,869	4,379	5,921
Incidental Treatment Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Mountain Mahogany	1,143	0	686
Avoidance Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Mixed Conifer	11	0	0
Aspen	2	0	0
Riparian Wetlands	193	0	0



Map A.34. Treatment Unit C-1 — Alternative A: Proposed Action and Alternative B: Reduced Ground Disturbance

Appendix A Site-specific information for vegetation treatments and range improvements
Treatment Unit C-1

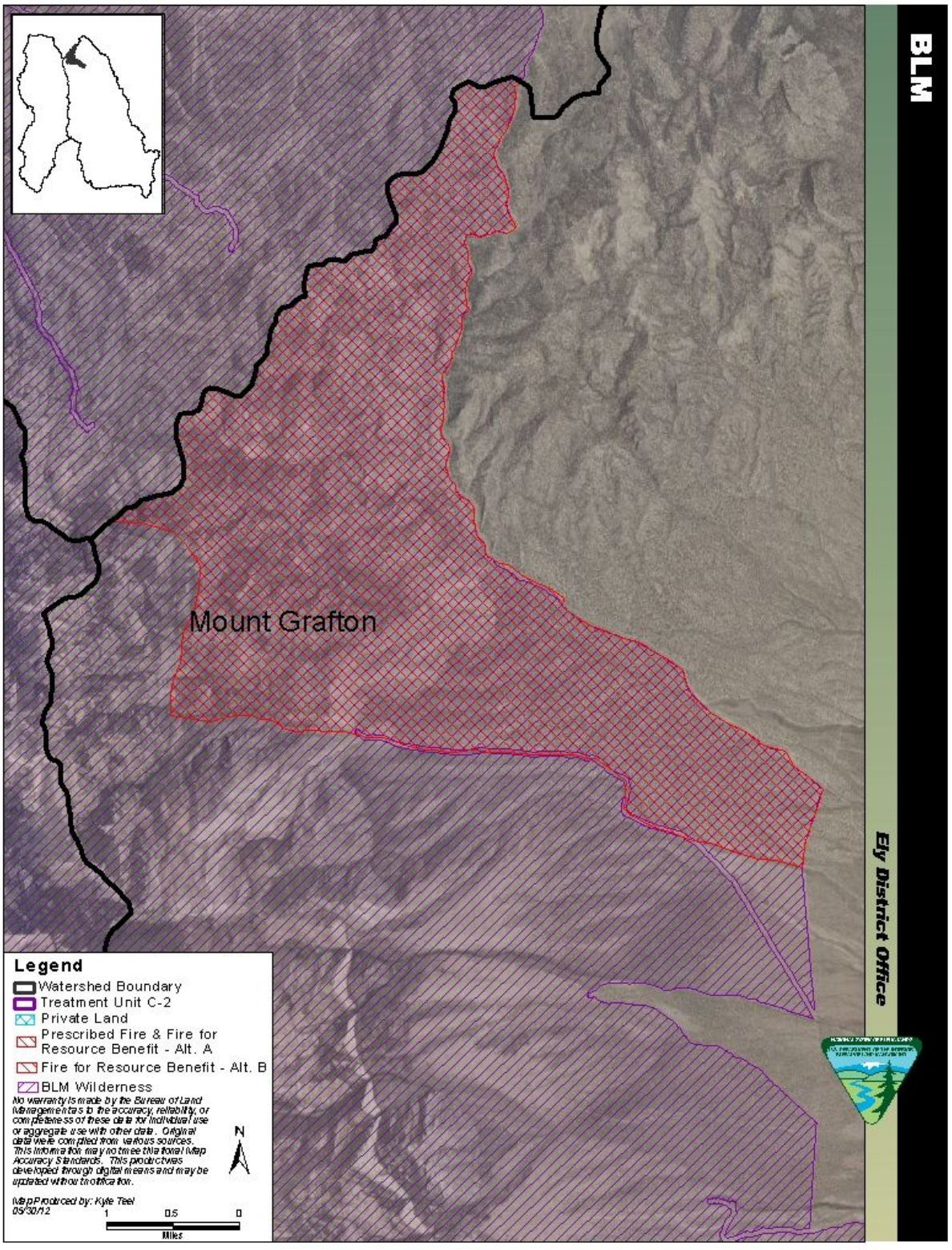
November 5, 2012

A.1.19. Treatment Unit C-2

Treatment Unit C-2 consists of a total of 6,751 acres and 40-60% of that area, or approximately 2,700-4,051 acres, would be targeted for treatment.

Table A.19. Vegetation Types for Treatment Unit C-2

Target Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Sagebrush	3,640	1,456	2,184
Pinyon-Juniper Woodlands	1,725	690	1,035
TOTALS	5,365	2,146	3,219
Incidental Treatment Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Mountain Mahogany	1,141	0	685
Mixed Conifer	6	0	4
Avoidance Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Riparian Wetlands	199	0	0
Salt Desert Scrub	21	0	0



Map A.35. Treatment Unit C-2 — Alternative A: Proposed Action and Alternative B: Reduced Ground Disturbance

Appendix A Site-specific information for vegetation treatments and range improvements
Treatment Unit C-2

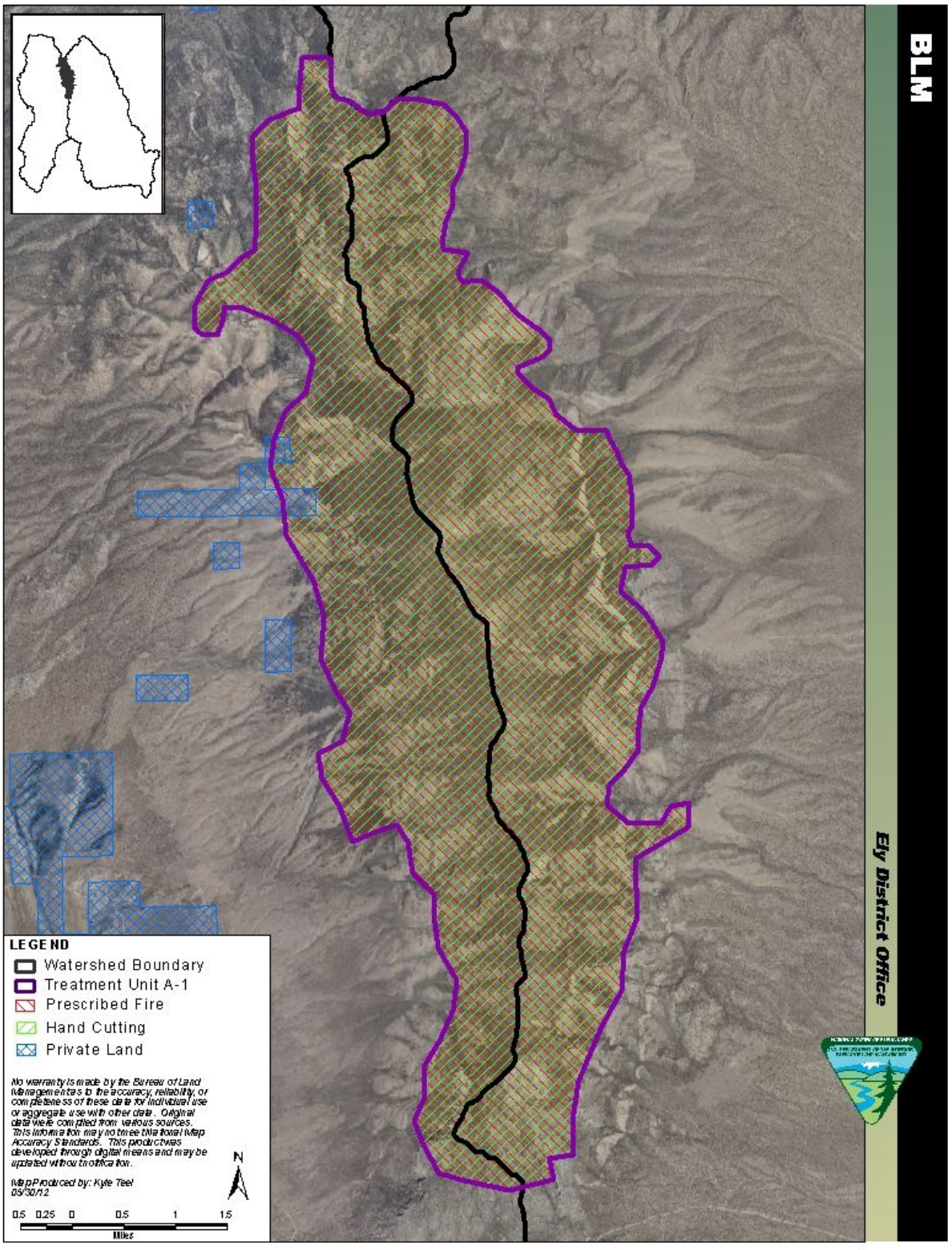
November 5, 2012

A.1.20. Treatment Unit A-1

Treatment Unit A-1 consists of a total of 16,258 acres and 60-80% of that area, or approximately 9,755-13,006 acres, would be targeted for treatment

Table A.20. Vegetation Types for Treatment Unit A-1

Target Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Aspen	5,399	3,239	4,319
High Elevation Conifer (Mixed Conifer)	3,256	1,953	2,605
Mountain Mahogany	4,811	2,887	3,849
Sagebrush	1,465	879	1,172
TOTALS	14,931	8,958	11,945
Incidental Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Pinyon-Juniper Woodlands	381	0	305
Avoidance Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Riparian/Wetland	121	0	0
High Elevation Conifer (Limber Pine/Bristlecone Pine Woodland)	331	0	0



Map A.36. Treatment Unit A-1 — Alternative B: Reduced Ground Disturbance

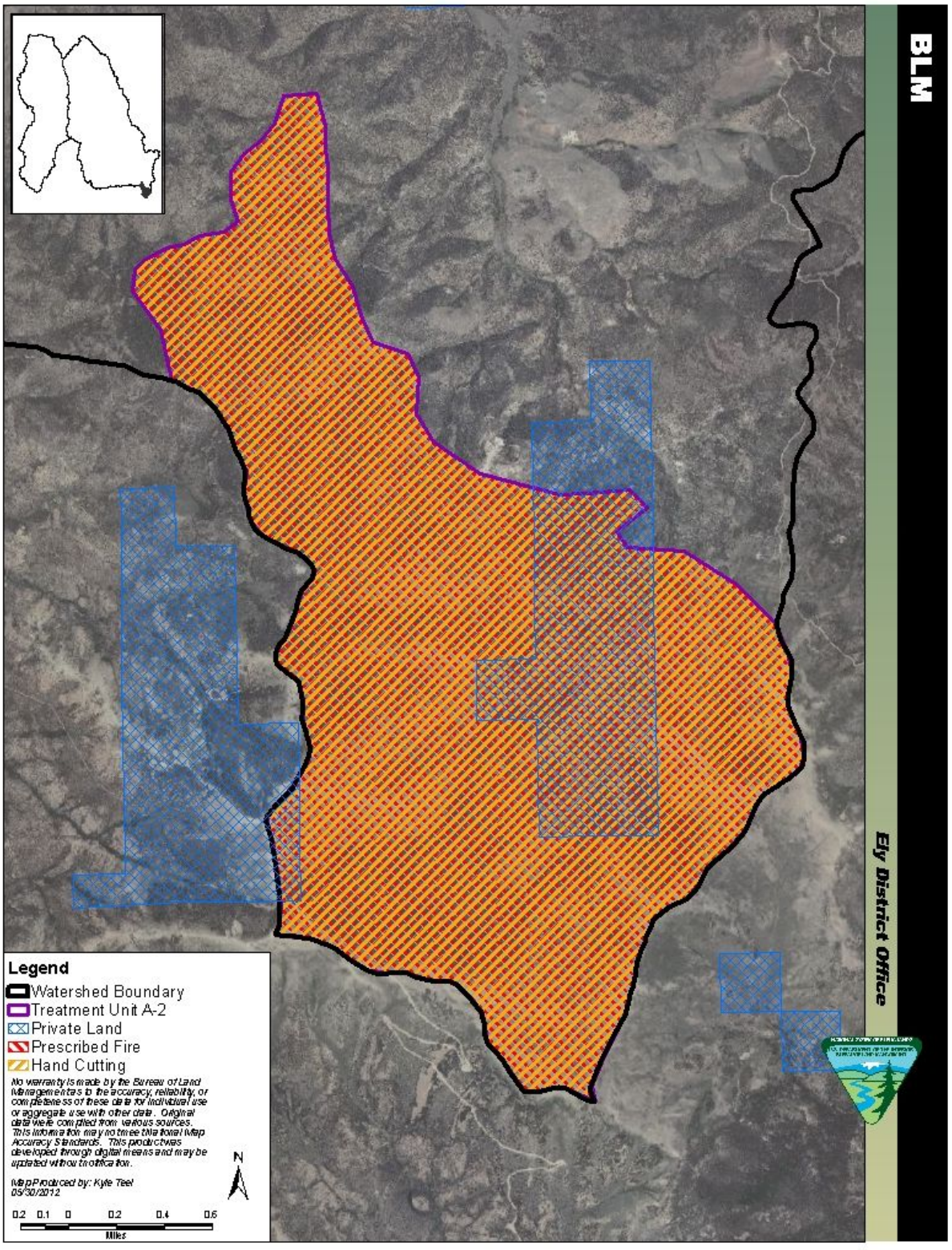
Appendix A Site-specific information for vegetation treatments and range improvements
Treatment Unit A-1

November 5, 2012

A.1.21. Treatment Unit A-2

Table A.21. Vegetation Types for Treatment Unit A-2

Target Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Aspen	1,028	615	923
High Elevation Conifer (mixed conifer)	315	189	252
Mountain Mahogany	1,165	699	932
Sagebrush	400	240	320
TOTALS	2,908	1,743	2,427
Incidental Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Pinyon-Juniper Woodlands	145	0	116
Avoidance Vegetation Types			
RMP Reference Name	**Total Acreage**	**Target Acreage**	**Acreage Not to Exceed**
Riparian Wetland	42	0	0
High Elevation Conifer (Limber Pine/Bristlecone Pine Woodland)	46	0	0



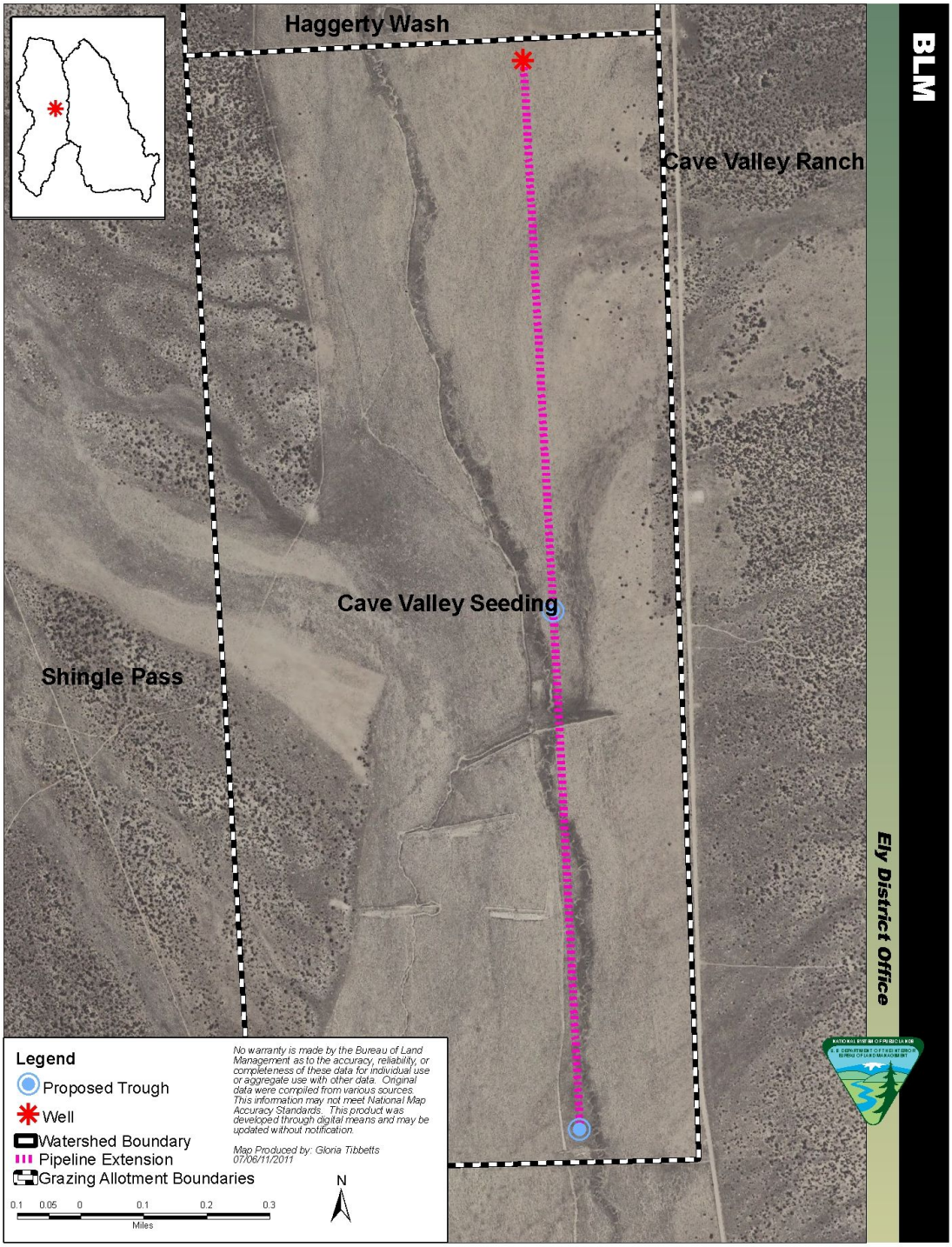
Map A.37. Treatment Unit A-2 — Alternative A: Proposed Action

Appendix A Site-specific information for vegetation treatments and range improvements
Treatment Unit A-2

November 5, 2012

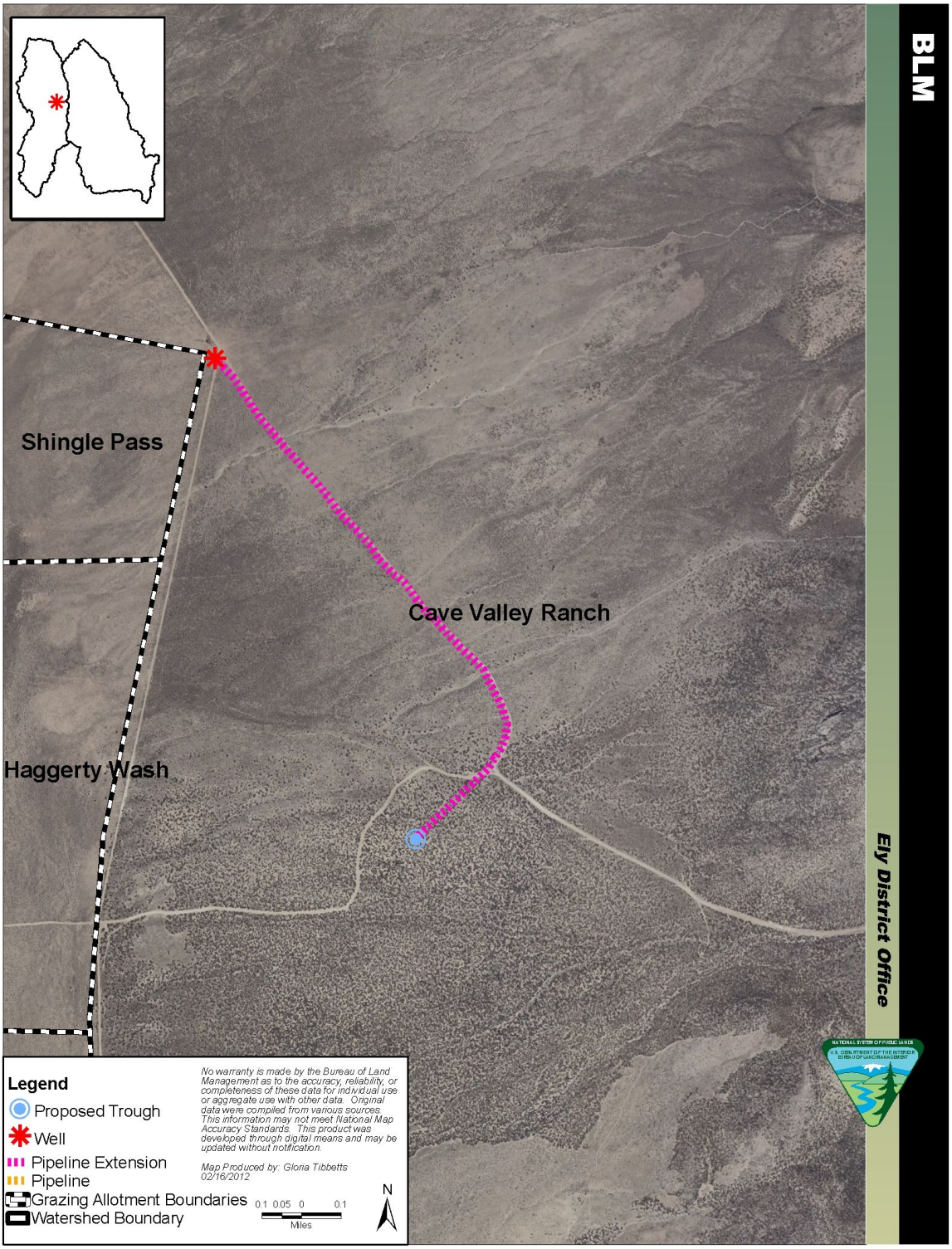
A.2. Range Improvements

A.2.1. Cave Valley Seeding Pipeline



Map A.38. Cave Valley Seeding Pipeline — Alternative A: Proposed Action

A.2.2. Cave Valley Well No.2 Pipeline

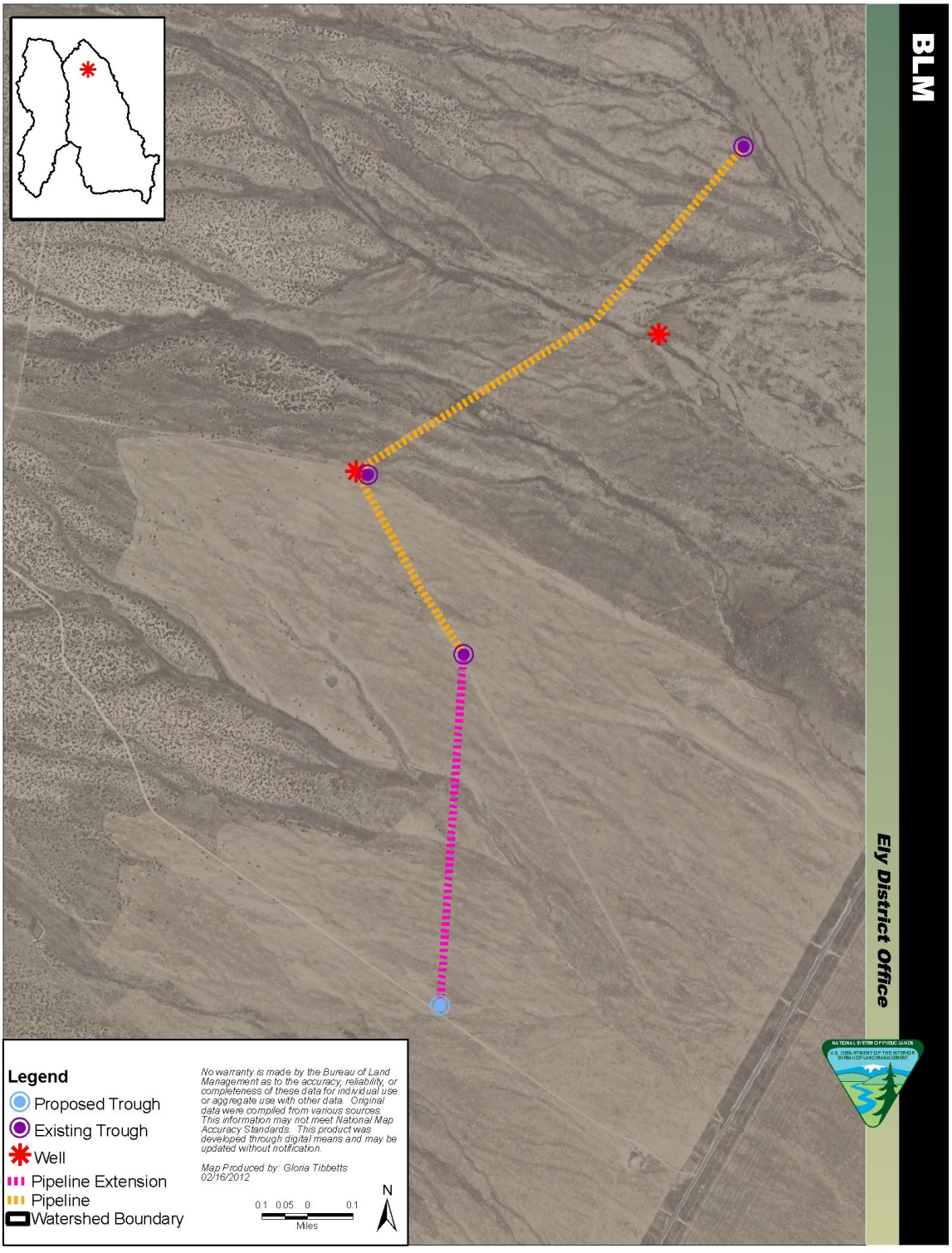


Map A.39. Cave Valley Well No.2 Pipeline — Alternative A: Proposed Action

Appendix A Site-specific information for vegetation treatments and range improvements
Cave Valley Well No.2 Pipeline

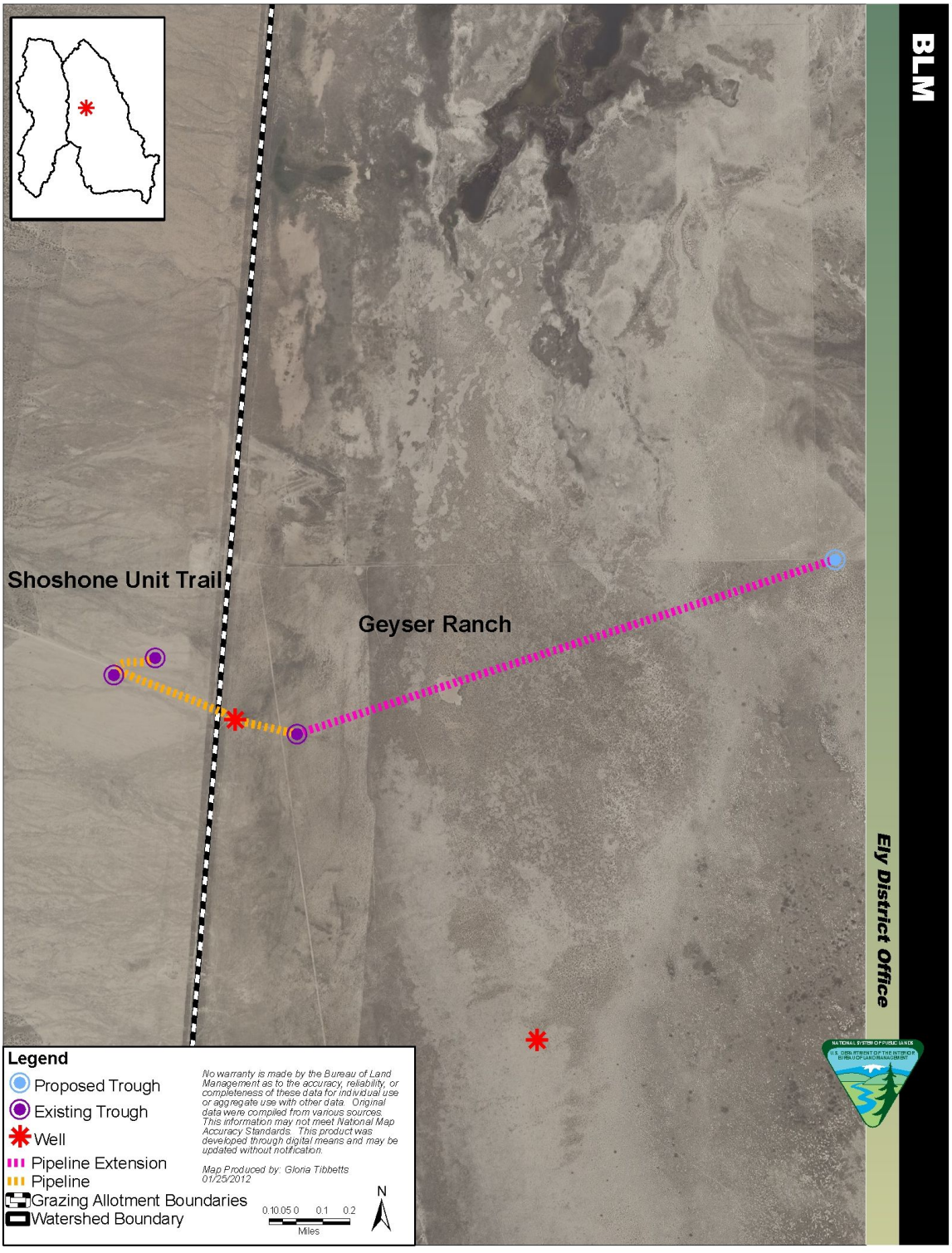
November 5, 2012

A.2.3. North Eldridge Pipeline



Map A.40. North Eldridge Pipeline — Alternative A: Proposed Action

A.2.4. Mendenhall Pipeline

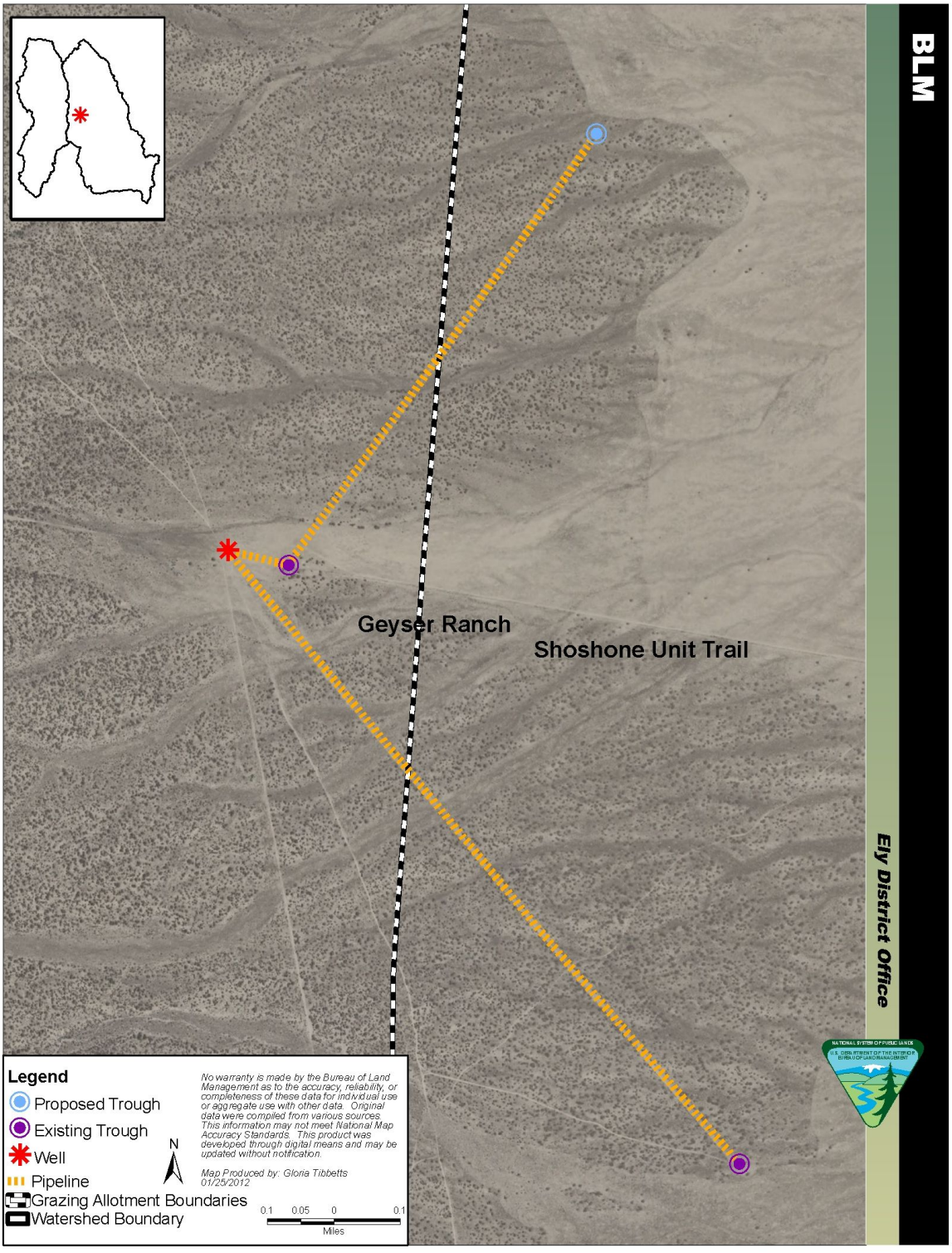


Map A.41. Mendenhall Pipeline — Alternative A: Proposed Action

Appendix A Site-specific information for vegetation treatments and range improvements
Mendenhall Pipeline

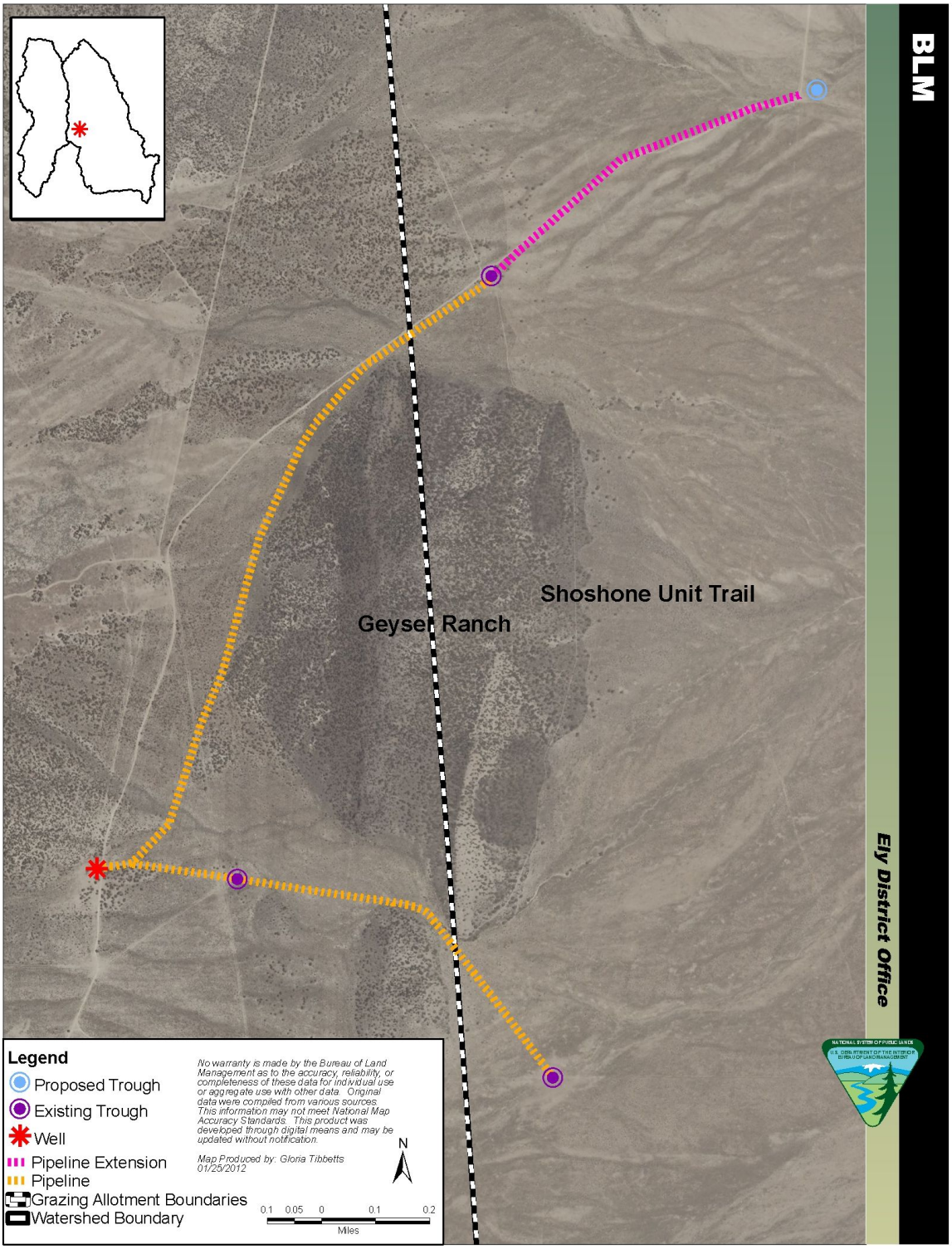
November 5, 2012

A.2.5. Geyser Free Pipeline



Map A.42. Geyser Free Pipeline — Alternative A: Proposed Action

A.2.6. Milk Ranch Well Pipeline

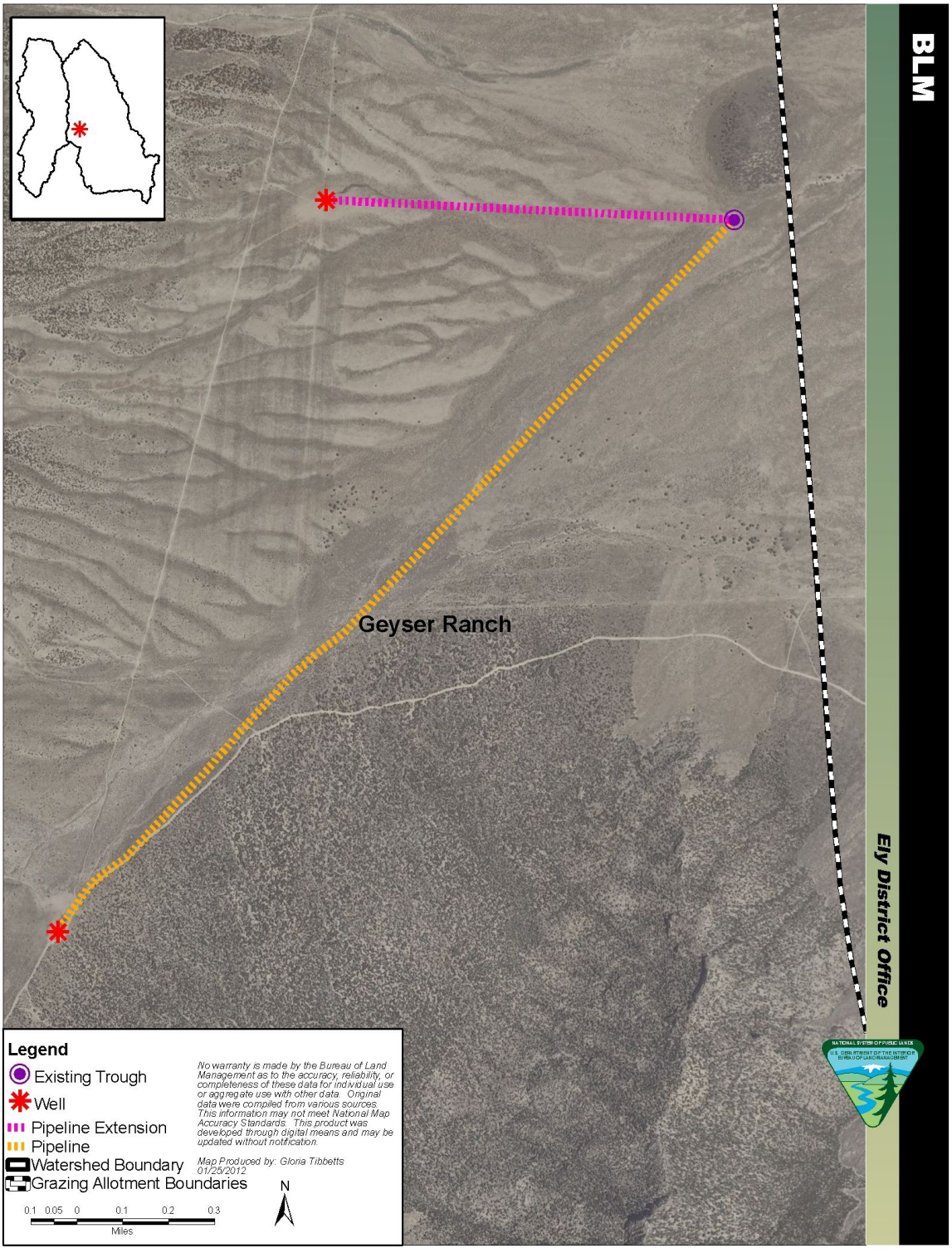


Map A.43. Milk Ranch Well Pipeline — Alternative A: Proposed Action

Appendix A Site-specific information for vegetation treatments and range improvements
Milk Ranch Well Pipeline

November 5, 2012

A.2.7. New Muleshoe Pipeline



Map A.44. New Muleshoe Pipeline — Alternative A: Proposed Action

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Appendix B. Biophysical Setting Classes

B.1.

CAVE & LAKE VALLEY WATERSHED SUMMARY								Proposed Action Impacts by Restoration Category								OVERALL PROPOSED ACTION		DEPARTURE FROM DESIRED FUTURE CONDITION BY PERCENT COMPOSITION	
								Sage Restoration		Woodland Restoration		Combination Restoration		Aspen Restoration					
ROCKY MOUNTAIN ASPEN FOREST AND WOODLAND	BpS MODEL & CLASS		CV COUNT	CURRENT ACRES	CURRENT PERCENT	DESIRED FUTURE CONDITION	DESIRED FUTURE CONDITION ACRES	Acres Removed	Acres Added	Acres Removed	Acres Added	Acres Removed	Acres Added	Acres Removed	Acres Added	PROPOSED ACTION IMPACT (ACRES)	PROPOSED ACTION IMPACT (% COMPOSITION)	PROPOSED ACTION	CURRENT CONDITION
	1011	A		98	20%	14%	69	0	0	0	0	0	0	39	29	88	18%	4%	6%
		B		83	17%	40%	198	0	0	0	0	0	0	36	82	129	26%	-14%	-23%
		C		87	18%	25%	124	0	0	0	0	0	0	50	51	89	18%	-7%	-7%
		D		72	15%	20%	99	0	0	0	0	0	0	31	41	82	17%	-3%	-5%
		E		9	2%	1%	5	0	0	0	0	0	0	3	2	8	2%	1%	1%
		U		146	29%	0%	0	0	0	0	0	0	0	46	0	99	20%	20%	29%
	TOTALS			495	100%	100%	495	0	0	0	0	0	0	205.528	205.528	495	100%	8%	12%
GREAT BASIN PINYON JUNIPER WOODLAND	BpS MODEL & CLASS		CV COUNT	CURRENT ACRES	CURRENT PERCENT	DESIRED FUTURE CONDITION	DESIRED FUTURE CONDITION ACRES												
	1019	A		140	0%	5%	3173	0	0	6	150	10	75	0	0	349	1%	-4%	-5%
		B		138	0%	5%	3173	0	0	10.1232	150.423	0	75	0	0	353	1%	-4%	-5%
		C		8063	13%	20%	12690	0	0	366.3	601.691	40	302	0	0	8560	13%	-7%	-7%
		D		23823	38%	65%	41243	0	0	1129.45	1955.5	331	981	0	0	25299	40%	-25%	-27%
		E		14291	23%	5%	3173	0	0	706.848	150.423	384	75	0	0	13426	21%	16%	18%
		U		16995	27%	0%	0	0	0	789.343	0	743	0	0	0	15463	24%	24%	27%
	TOTALS			63450	100%	100%	63450	0	0	3008.46	3008.46	1508.62	1508.62	0	0	63450	100%	13%	15%

INTER-MOUNTAIN SUBALPINE LIMBER-BRISTLE-CONE PINE WOOD-LAND	BpS MODEL & CLASS		CV CO-UNT	CUR-R-ENT ACR-ES	CUR-RENT PER-CENT	DE-SIRED FU-TURE CON-DI-TION	DE-SIRED FU-TURE CON-DITION ACRES												
	1020	A		144	37%	20%	78												
		B		33	8%	20%	78												
		C		127	32%	60%	235												
		D		1	0%	0%	0												
		E		5	1%	0%	0												
		U		83	21%	0%	0												
	TOTALS			392	100%	100%	392												
SOUTH-ERN ROCKY MOUN-TAIN MESIC MONTANE MIXED CONIFER FOREST & WOOD-LAND	BpS MODEL & CLASS		CV CO-UNT	CUR-R-ENT ACR-ES	CUR-RENT PER-CENT	DE-SIRED FU-TURE CON-DI-TION	DE-SIRED FU-TURE CON-DITION ACRES												
	1052	A		109	3%	20%	750	0	0	10	18	0	0	36	254	335	9%	-11%	-17%
		B		2985	80%	20%	750	0	0	36.0528	18	0	0	1409	1017	2575	69%	49%	60%
		C		519	14%	60%	2251	0	0	37.4736	53	0	0	202	254	587	16%	-44%	-46%
		D		3	0%	0%	0	0	0	0.444	0	0	0	1	169	171	5%	5%	0%
		E		78	2%	0%	0	0	0	2.1312	0	0	0	26	0	50	1%	1%	2%
		U		56	1%	0%	0	0	0	2.0424	0	0	0	21	0	33	1%	1%	1%
	TOTALS			3752	100%	100%	3752	0	0	88.1784	88.1784	0	0	1694.7	1694.7	3752	100%	18%	15%

ROCKY MOUNTAIN SUBALPINE DRY MESIC SPRUCE FIR FOREST AND WOODLAND	BpS MODEL & CLASS		CV COUNT	CURRENT ACRES	CURRENT PERCENT	DESIRED FUTURE CONDITION	DESIRED FUTURE CONDITION ACRES												
	1055	A		16	3%	20%	115	0	0	0	0	0	0	9	68.0652	75	13%	-7%	-17%
		B		145	25%	20%	115	0	0	0	0	0	0	86.0472	68.0652	127	22%	2%	5%
		C		241	42%	60%	344	0	0	0	0	0	0	144.057	204.196	302	53%	-7%	-18%
		D		161	28%	0%	0	0	0	0	0	0	0	96.3036	0	64	11%	11%	28%
		E		6	1%	0%	0	0	0	0	0	0	0	3.4632	0	2	0%	0%	1%
		U		4	1%	0%	0	0	0	0	0	0	0	2.2644	0	2	0%	0%	1%
	TOTALS			573	100%	100%	573	0	0	0	0	0	0	340.326	340.326	573	100%	5%	12%
INTER-MOUNTAIN BASINS ASPEN-MIXED CONIFER FOREST AND WOODLANDS	BpS MODEL & CLASS		CV COUNT	CURRENT ACRES	CURRENT PERCENT	DESIRED FUTURE CONDITION	DESIRED FUTURE CONDITION ACRES												
	1061	A		497	8%	14%	857	0	0	0	0	0	0	254	486	729	12%	-2%	-6%
		B		275	4%	40%	2449	0	0	0	0	0	0	149	1389	1515	25%	-15%	-36%
		C		378	6%	25%	1531	0	0	0	0	0	0	214	868	1031	17%	-8%	-19%
		D		64	1%	20%	1225	0	0	0	0	0	0	32	694	726	12%	-8%	-19%
		E		1916	31%	1%	61	0	0	0	0	0	0	1108	35	843	14%	13%	30%
		U		2994	49%	0%	0	0	0	0	0	0	0	1715	0	1279	21%	21%	49%
	TOTALS			6123	100%	100%	6123	0	0	0	0	0	0	3471.59	3471.59	6123	100%	11%	27%

INTER-MOUNTAIN BASINS MOUN-TAIN MA-HOGANY WOOD-LAND AND SHRUB-LAND	BpS MODEL & CLASS		CV CO-UNT	CUR-R-ENT ACR-ES	CUR-RENT PER-CENT	DE-SIRED FU-TURE CON-DI-TION	DE-SIRED FU-TURE CON-DITION ACRES												
	1062	A		12398	50%	10%	2492	0	0	331	57	0	0	1217	331	11238	45%	35%	40%
		B		4415	18%	20%	4984	0	0	84	114	0	0	879	663	4229	17%	-3%	-2%
		C		3081	12%	10%	2492	0	0	66	57	0	0	572	331	2831	11%	1%	2%
		D		1016	4%	15%	3738	0	0	7	85	0	0	116	497	1476	6%	-9%	-11%
		E		3545	14%	45%	11213	0	0	74	256	0	0	432	1492	4787	19%	-26%	-31%
		U		463	2%	0%	0	0	0	7	0	0	0	98	0	357	1%	1%	2%
	TOTALS			24919	100%	100%	24919	0	0	569.741	569.741	0	0	3314.68	3314.68	24919	100%	12%	15%
GREAT BASIN XERIC MIXED SAGE-BRUSH SHRUB-LAND	BpS MODEL & CLASS		CV CO-UNT	CUR-R-ENT ACR-ES	CUR-RENT PER-CENT	DE-SIRED FU-TURE CON-DI-TION	DE-SIRED FU-TURE CON-DITION ACRES												
	1079	A		13	0%	25%	36721	1.998	8128.66	0	346	2	560	0	8	9051	6%	-19%	-25%
		B		6356	4%	35%	51409	942.923	11380.1	180	485	4	783	3	11	17885	12%	-23%	-31%
		C		19776	13%	25%	36721	5127.13	8128.66	86	346	185	560	2	8	23418	16%	-9%	-12%
		D		37522	26%	5%	7344	7483.44	1625.73	282	69	465	112	1	2	31100	21%	16%	21%
		E		1888	1%	5%	7344	406.393	1625.73	24	69	56	112	0	2	3211	2%	-3%	-4%
		U		81326	55%	5%	7344	18552.8	1625.73	813	69	1528	112	23	2	62218	42%	37%	50%
	TOTALS			146882	100%	100%	146882	32514.7	32514.7	1384.84	1384.84	2238.2	2238.2	30.5028	30.5028	146882	100%	18%	24%

INTER-MOUNTAIN BASIN BIG SAGEBRUSH SHRUBLAND	BpS MODEL & CLASS		CV COUNT	CURRENT ACRES	CURRENT PERCENT	DESIRED FUTURE CONDITION	DESIRED FUTURE CONDITION ACRES												
	1080	A		86	0%	25%	48131	4	9485	1	193	4	383	1	20	10158	5%	-20%	-25%
		B		15839	8%	35%	67383	1300	13279.4	84	270	1	535.975	1	28	28567	15%	-20%	-27%
		C		71650	37%	25%	48131	16087	9485.27	68	193	86	383	6	20	65483	34%	9%	12%
		D		15424	8%	5%	9626	4874	1897.05	29	39	176	77	6	4	12355	6%	1%	3%
		E		33637	17%	5%	9626	7702	1897.05	502	39	960	77	61	4	26427	14%	9%	12%
		U		55886	29%	5%	9626	7973	1897.05	87	39	304	77	5	4	49533	26%	21%	24%
	TOTALS			192522	100%	100%	192522	37941	37941	770	770	1531	1531	80	80	192522	100%	13%	17%
INTER-MOUNTAIN BASINS MIXED SALT DESERT SCRUB	BpS MODEL & CLASS		CV COUNT	CURRENT ACRES	CURRENT PERCENT	DESIRED FUTURE CONDITION	DESIRED FUTURE CONDITION ACRES												
	1081	A		0	0%	5%	2109												
		B		16302	39%	40%	16868												
		C		11767	28%	37%	15603												
		D		10	0%	5%	2109												
		E		0	0%	0%	0												
		U		14092	33%	18%	7591												
	TOTALS			42171	100%	105%	44280												

ROCKY MOUNTAIN LOWER MONTANE-FOOTHILL SHRUB-LAND	BpS MODEL & CLASS		CV CO-UNT	CUR-R-ENT ACR-ES	CUR-RENT PER-CENT	DE-SIRED FU-TURE CON-DI-TION	DE-SIRED FU-TURE CON-DITION ACRES												
	1086	A		210	21%	5%	50												
		B		18	2%	20%	202												
		C		626	62%	70%	705												
		D		6	1%	5%	50												
		E		8	1%	0%	0												
		U		139	14%	0%	0												
	TOTALS			1008	100%	100%	1008												
GREAT BASIN SEMI-DESERT CHAPAR-RAL	BpS MODEL & CLASS		CV CO-UNT	CUR-R-ENT ACR-ES	CUR-RENT PER-CENT	DE-SIRED FU-TURE CON-DI-TION	DE-SIRED FU-TURE CON-DITION ACRES												
	1103	A		0	0%	15%	195												
		B		486	37%	85%	1105												
		C		14	1%	0%	0												
		D		40	3%	0%	0												
		E		28	2%	0%	0												
		U		732	56%	0%	0												
	TOTALS			1300	100%	100%	1300												
MOGOL-LON CHAP-ARRAL	BpS MODEL & CLASS		CV CO-UNT	CUR-R-ENT ACR-ES	CUR-RENT PER-CENT	DE-SIRED FU-TURE CON-DI-TION	DE-SIRED FU-TURE CON-DITION ACRES												
	1104	A		2	0%	15%	91												
		B		99	16%	85%	517												
		C		3	0%	0%	0												
		D		6	1%	0%	0												
		E		21	3%	0%	0												
		U		478	79%	0%	0												

	TOTALS			608	100%	100%	608												
ROCKY MOUNTAIN GAMBEL OAK — MIXED MONTANE SHRUBLAND	BpS MODEL & CLASS		CV COUNT	CURRENT ACRES	CURRENT PERCENT	DESIRED FUTURE CONDITION	DESIRED FUTURE CONDITION ACRES												
	1107	A		16	7%	5%	11												
		B		40	18%	35%	78												
		C		55	25%	60%	133												
		D		0	0%	0%	0												
		E		1	0%	0%	0												
		U		111	50%	0%	0												
	TOTALS			222	100%	100%	222												
COLUMBIA PLATEAU LOW SAGEBRUSH STEPPE	BpS MODEL & CLASS		CV COUNT	CURRENT ACRES	CURRENT PERCENT	DESIRED FUTURE CONDITION	DESIRED FUTURE CONDITION ACRES												
	1124	A		15	0%	25%	1508	3.4632	208	1	17	0	67	0	9	312.021	0.051739371	-20%	-25%
		B		30	0%	35%	2111	2.664	291.002	2	24	0	94	2	13	445.32756	0.073844285	-28%	-35%
		C		1629	27%	25%	1508	226.44	207.859	31	17	20	67	12	9	1641.801	0.272243696	2%	2%
		D		83	1%	5%	302	15.8508	41.5717	0	3	6	13	0	2	121.73148	0.020185533	-3%	-4%
		E		98	2%	5%	302	11.7216	41.5717	1	3	7	13	0	2	139.13628	0.023071599	-3%	-3%
		U		4175	69%	5%	302	571.295	41.5717	34	3	237	13	23	2	3370.61268	0.558915516	51%	64%
	TOTALS			6031	100%	100%	6031	831.434	831	68	68	269.863	269.863	37.0296	37.0296	6030.63	1	18%	22%

INTER-MOUNTAIN BASINS MONTANE SAGE-BRUSH STEPPE	BpS MODEL & CLASS		CV CO-UNT	CUR-R-ENT ACR-ES	CUR-RENT PER-CENT	DE-SIRED FU-TURE CON-DI-TION	DE-SIRED FU-TURE CON-DITION ACRES												
	1126	A		49	0%	25%	6237	4	883	0	36	1	111	19	134	1189	5%	-20%	-25%
		B		266	1%	35%	8731	10	1236	4	50	1	156	26	538	2250	9%	-26%	-34%
		C		6202	25%	25%	6237	1183	883	11	36	18	111	650	134	5505	22%	-3%	0%
		D		3892	16%	5%	1247	625	177	17	7	23	22	11	90	3510	14%	9%	11%
		E		12553	50%	5%	1247	1449	177	97	7	377	22	21	0	10816	43%	38%	45%
		U		1985	8%	5%	1247	260	177	14	7	25	22	170	0	1722	7%	2%	3%
	TOTALS			24947	100%	100%	24947	3532	3532	143	143	444	444	896	896	24947	100%	16%	20%
INTER-MOUNTAIN BASINS SEMI-DESERT SHRUB-STEPPE	BpS MODEL & CLASS		CV CO-UNT	CUR-R-ENT ACR-ES	CUR-RENT PER-CENT	DE-SIRED FU-TURE CON-DI-TION	DE-SIRED FU-TURE CON-DITION ACRES												
	1127	A		0	0%	25%	133	0	10	0	0	0	7	0	0	17	3%	-22%	-25%
		B		5	1%	35%	186	0.1332	14.2191	0	0	0	10	0	0	28	5%	-30%	-34%
		C		3	1%	25%	133	0.2664	10.1565	0	0	0	7	0	0	20	4%	-21%	-24%
		D		12	2%	5%	27	0.666	2.0313	0	0	0	1	0	0	14	3%	-2%	-3%
		E		28	5%	5%	27	3.1968	2.0313	0	0	2	1	0	0	26	5%	0%	0%
		U		484	91%	5%	27	36.2304	2.0313	0	0	25	1	0	0	427	80%	75%	86%
	TOTALS			532	100%	100%	532	41	41	0	0	27.528	27.528	0	0	532	100%	24%	29%

INTER-MOUNTAIN BASINS SEMI-DESERT GRASS-LAND	BpS MODEL & CLASS		CV CO-UNT	CUR-R-ENT ACR-ES	CUR-RENT PER-CENT	DE-SIRED FU-TURE CON-DI-TION	DE-SIRED FU-TURE CON-DITION ACRES												
	1135	A		24	19%	20%	25												
		B		3	3%	80%	99												
		C		1	1%	0%	0												
		D		0	0%	0%	0												
		E		0	0%	0%	0												
		U		95	77%	0%	0												
	TOTALS			124	100%	100%	124												
INTER-MOUNTAIN BASINS GREASE-WOOD FLAT	BpS MODEL & CLASS		CV CO-UNT	CUR-R-ENT ACR-ES	CUR-RENT PER-CENT	DE-SIRED FU-TURE CON-DI-TION	DE-SIRED FU-TURE CON-DITION ACRES												
	1153	A		0	0%	5%	1585												
		B		30174	95%	95%	30115												
		C		393	1%	0%	0												
		D		7	0%	0%	0												
		E		1	0%	0%	0												
		U		1125	4%	0%	0												
	TOTALS			31700	100%	100%	31700												
INTER-MOUNTAIN MONTANE RIPARIAN SYSTEMS	BpS MODEL & CLASS		CV CO-UNT	CUR-R-ENT ACR-ES	CUR-RENT PER-CENT	DE-SIRED FU-TURE CON-DI-TION	DE-SIRED FU-TURE CON-DITION ACRES												
	1154	A		5	0%	20%	2215												
		B		85	1%	50%	5537												
		C		1449	13%	30%	3322												
		D		144	1%	0%	0												
		E		307	3%	0%	0												
		U		9083	82%	0%	0												

TOTALS		11073	100%	100%	11073										

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Appendix C. Departure Matrix

C.1.

BPS MODEL NAME	BPS MODEL NUMBER	CURRENT		PROPOSED ACTION & ALTERNATIVE B	
		DEPARTURE (%)	FRCC	DEPARTURE (%)	FRCC
ROCKY MOUNTAIN ASPEN FOREST AND WOODLAND	1011	60	2	29	1
GREAT BASIN PINYON JUNIPER WOODLAND	1019	55	2	41	2
INTER-MOUNTAIN SUBALPINE LIMBER-BRISTLECONE PINE WOODLAND	1020	58	2	58	2
SOUTHERN ROCKY MOUNTAIN MESIC MONTANE MIXED CONIFER FOREST & WOODLAND	1052	78	3	30	1
ROCKY MOUNTAIN SUBALPINE DRY MESIC SPRUCE FIR FOREST AND WOODLAND	1055	39	2	14	1
INTER-MOUNTAIN BASINS ASPEN-MIXED CONIFER FOREST AND WOODLANDS	1061	80	3	39	2
INTER-MOUNTAIN BASINS MOUNTAIN MAHOGANY WOODLAND AND SHRUBLAND	1062	62	2	50	3
GREAT BASIN XERIC MIXED SAGEBRUSH SHRUBLAND	1079	73	3	54	3
INTER-MOUNTAIN BASIN BIG SAGEBRUSH SHRUBLAND	1080	57	2	40	2
INTERMOUNTAIN BASINS MIXED SALT DESERT SCRUB	1081	15	1	15	1
ROCKY MOUNTAIN LOWER MONTANE-FOOTHILL SHRUBLAND	1086	79	3	79	3
GREAT BASIN SEMI-DESERT CHAPARRAL	1103	63	2	63	2
MOGOLLON CHAPARRAL	1104	84	3	84	3
ROCKY MOUNTAIN GAMBEL OAK-MIXED MONTANE SHRUBLAND	1107	72	3	72	3
COLUMBIA PLATEAU LOW SAGEBRUSH STEPPE	1124	67	3	54	2
INTER-MOUNTAIN BASINS MONTANE SAGEBRUSH STEPPE	1126	69	3	46	2
INTER-MOUNTAIN BASINS SEMI-DESERT SHRUB-STEPPE	1127	99	3	68	3
INTER-MOUNTAIN BASINS SEMI-DESERT GRASSLAND	1135	78	3	78	3
INTER-MOUNTAIN BASINS GREASEWOOD FLAT	1153	27	1	27	1
INTER-MOUNTAIN MONTANE RIPARIAN SYSTEMS	1154	83	3	83	3

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Appendix D. Programmatic Agreement for Compliance with the National Historic Preservation Act

D.1.

**PROGRAMMATIC AGREEMENT BETWEEN
THE SCHELL FIELD OFFICE OF THE BUREAU OF LAND MANAGEMENT
AND
THE NEVADA STATE HISTORIC PRESERVATION OFFICER
REGARDING
NATIONAL HISTORIC PRESERVATION ACT COMPLIANCE
FOR
CAVE VALLEY AND LAKE VALLEY WATERSHED RESTORATION PLAN
LINCOLN AND WHITE PINE COUNTIES, NEVADA**

WHEREAS, the Schell Field Office of the Bureau of Land Management (BLM) is preparing a plan to conduct multiple phased range improvements, vegetation and fire management on +/- 240,000 acres of public lands at various locations within Cave Valley and Lake Valley Watersheds, Lincoln and White Pine Counties, Nevada (hereinafter referred to as the "undertaking" as defined in 36 C.F.R. § 800.16[y]); and

WHEREAS, the BLM proposes to implement the undertaking to comply with all relevant Federal regulations, policies, and laws; and implementing these policies subject to the requirements of the National Environmental Policy Act of 1969 (NEPA); the BLM is responsible for completing NEPA and ensuring that it is in compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA), 16 U.S.C. § 470f, and its implementing regulations, 36 C.F.R. § 800; and

WHEREAS, the BLM has determined that the undertaking may have an effect upon properties eligible for inclusion in the National Register of Historic Places (NRHP), and has consulted with the Nevada State Historic Preservation Officer (SHPO) pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA); and

WHEREAS, the BLM has consulted with the Advisory Council on Historic Preservation (ACHP), pursuant to 36 CFR §800.14(b), to develop and execute this Programmatic Agreement (PA) and the ACHP has elected not to formally enter consultation on the development of this PA; and

WHEREAS, effects to historic properties in the Area of Potential Effect (APE) cannot be fully determined and the Parties desire to enter into this Agreement to set forth procedures to be followed in satisfaction of the BLM's Section 106 responsibilities of the National Historic Preservation Act, for the Project in the APE, and

WHEREAS, the BLM is responsible for conducting Native American Tribal consultation on a government to government level and ensuring that it is in compliance with the BLM Manual Handbook, H-8120-1, Guidelines for Conducting Tribal Consultation, the tribes consulted were (Ely Shoshone Tribe, Duckwater Shoshone Tribe, Confederated Tribes of the Goshute Reservation, Moapa Band of Paiutes, and Paiute Indian Tribe of Utah); and

WHEREAS the undertaking would be implemented over the course of the next 10 years; and

WHEREAS, this Programmatic Agreement (PA) covers all aspects of the planning, development, and implementation of undertaking including but not limited to fire, prescribed fire, tree cutting and removal, chaining, mowing, herbicide treatments, weed prevention and treatment, aspen restoration, seeding, and the construction and maintenance of pipelines, wells, springs, water troughs, reservoirs, corrals, cattle guards, and fences ;

NOW THEREFORE, the signatories agree that implementation of the NEPA decision record shall be administered in accordance with the following stipulations to ensure that historic properties will be treated to avoid or mitigate effects to the extent practicable, regardless of surface ownership and to satisfy the BLM's NHPA Section 106 responsibilities for all aspects of the undertaking.

I. ROLES AND RESPONSIBILITIES

The signatories agree that the *STATE PROTOCOL AGREEMENT between the Bureau of Land Management, Nevada and the Nevada State Historic Preservation Office for Implementing the National Historic Preservation Act, Finalized October 26, 2009* (Protocol), except as amended here, will be utilized for this PA. This Protocol is incorporated by reference.

The BLM is responsible for administering this PA. This includes but is not limited to: ensuring that signatories carry out their responsibilities; overseeing cultural resource work; assembling submissions to the SHPO including reports, determinations of eligibility and effect, and treatment plans; and for seeking SHPO concurrence with agency compliance decisions.

II. AREA OF POTENTIAL EFFECT

The area of potential effect (APE) for cultural resources is defined as the boundaries of the +/- 240,000 acres considered for range improvements, vegetation and fire management in the Cave Valley and Lake Valley Watershed Restoration Plan NEPA documents. The overall APE is shown on the maps in Appendix A. The APE for each subsequent phase will be designated in the Cultural Resource Inventory Needs Assessment. Per the Protocol, each approved Cultural Resource Inventory Needs Assessment will be sent to SHPO.

The APE shall be defined to include potential direct and indirect effects to cultural resources and properties of traditional religious and cultural importance from any activities associated with the undertaking without regard for land ownership.

Based on current data, there are no known historic properties outside of the direct APE that would have the characteristics that qualify them for listing in the NRHP adversely affected by visual impacts from the proposed action. However, the APE for assessing indirect effects on known historic properties will be the area plus one mile outward in all directions from the perimeter of each area, which would include some areas outside the undertaking area.

The BLM may amend the APE as needed or as requested by the SHPO or the Tribes without amending the PA proper.

III. STIPULATIONS

The BLM shall ensure that the stipulations of this PA are carried out by its contractors, subcontractors, or other personnel involved with this undertaking.

The BLM shall ensure that ethnographic, historic, architectural, and archaeological work conducted pursuant to this PA is carried out by or under the direct supervision of persons meeting qualifications set forth in the *Secretary of the Interior's Professional Qualifications Standards* (currently available at http://www.nps.gov/history/local-law/arch_stnds_9.htm) and that those who require permits for such work by the BLM Nevada have them.

A. Identification

1. The BLM, in consultation with the SHPO, shall ensure that appropriate cultural resource identification activities, including records research; informant interviews; context development; and archaeological, historic, or ethnographic inventory for the APE are conducted in a manner consistent with the Protocol.

2. Required identification activities shall be completed for the APE regardless of the ownership (public or private) of the lands involved and BLM shall be responsible for gaining access to privately held lands.

3. The BLM shall make a good faith effort to consult with the Tribes and affected tribal members to identify properties of traditional religious or cultural importance.

B. Eligibility

1 For each phase of undertaking within the APE, the BLM shall evaluate cultural resources for eligibility to the NRHP. The BLM will determine NRHP eligibility prior to the initiation of activities that may affect cultural resources, using the Protocol as guidance.

2. The BLM shall consult with the Tribes or identified affected tribal members to evaluate the NRHP-eligibility of properties of traditional religious and cultural importance. Based on information shared with the BLM, the BLM would determine the NRHP eligibility of identified properties, and consult on these determinations with SHPO and the Tribes.

3. The BLM shall ensure that appropriate cultural resource inventories that identify and evaluate cultural resources are completed and that appropriate reports are prepared in accordance with the Protocol and with the Nevada BLM's *Cultural Resources Inventory General Guidelines, 4th edition* (January 1990), or the latest edition issued by BLM Nevada (Guidelines) at the date of implementation of each phase.

C. Treatment

1. To the extent practicable, the BLM shall ensure that project activities avoids adverse affects to historic properties through project design, or redesign, relocation of activities, or by other means in a manner consistent with the Protocol.

2. In avoiding or mitigating effects, the BLM, in consultation with the SHPO, shall determine the precise nature of effects to historic properties identified in the APE, using the Protocol as guidance.

3. The BLM shall consult with the Tribes, or identified affected tribal members, to evaluate effects to properties of traditional religious and cultural importance. Based on information shared with the BLM, the BLM would determine the appropriate treatment to avoid or to minimize to the extent practicable adverse effects, and consult on these determinations with SHPO and the Tribes.

4. For properties eligible under NRHP criteria (a) through (c), mitigation other than data recovery may be considered in the treatment plan (e.g., Historic American Buildings Survey/Historic American Engineering Record recording, oral history, historic markers, exhibits, interpretive brochures or publications, etc.). Where appropriate, treatment plans may include provisions (content and number of copies) for a publication for the general public.

5. The BLM, in consultation with the SHPO, shall ensure that the fieldwork portions of any treatment plan (using BLM staff or contractors and subcontractors) are completed prior to initiating any activities that may affect historic properties located within the area covered by the plan.

6. The BLM shall ensure that all field records, artifacts and samples (soil, carbon…) collected during the identification, recordation and any treatment efforts are maintained until the final treatment report is complete. All artifacts will be curated in accordance with 36 C.F.R. § 79 or 43 C.F.R. § 10. BLM will encourage private owners to donate collections from their lands to the federal repository housing the public records and materials.

IV. DURATION

This PA shall remain in effect for ten (10) years from the date of its execution. If proposed actions in the APE are not completed prior to such time, the BLM may consult with the other signatories to reconsider the terms of the PA and amend it in accordance with Section X below. The BLM shall notify the signatories as to the course of action it will pursue.

V. POST-REVIEW DISCOVERY SITUATIONS

Stipulations of this PA and the Protocol are intended to identify and treat cultural resources that are eligible for inclusion in the NRHP. Unplanned discoveries of buried cultural resources are not anticipated. In the case of an unplanned discovery, the BLM will ensure that provisions in the Protocol (Section VI.B) and Appendix B of this PA are met.

Prior to initiating any ground disturbing activities within the APE, all BLM employees, contractors, and subcontractors empowered to halt activities in a discovery situation shall be informed about who to contact and under what time frame. At least one of these individuals will be present during any project field activities.

Activities in the area of the discovery will be halted until the BLM Authorized Officer provides written authorization that the required mitigation is complete and activities can resume.

VI. NOTICES TO PROCEED

When appropriate, in consultation with the SHPO and in compliance with the PA stipulations, the BLM may issue Notices to Proceed for individual project phases, under the following conditions:

A. The BLM, in consultation with the SHPO, has determined that

1. either there are no historic properties within the APE or through project design all historic properties will be avoided for the current phase of the undertaking; and

2. in consultation with the Tribes, no properties of traditional religious or cultural importance were identified within the APE for the current phase of the undertaking; or

B. The BLM, after consultation with the SHPO and in the case of properties of traditional religious or cultural importance, the Tribes, has implemented an adequate treatment plan for the current phase of the undertaking, and

1. the fieldwork phase of the treatment option has been completed; and

2. the BLM has prepared or accepted a summary description of the fieldwork performed and a schedule for reporting that work, and

3. the BLM shall provide a copy of the summary to SHPO; and

4. the SHPO shall review the summary and if the SHPO concurs or does not respond within two working days of receipt, BLM shall assume concurrence and issue the NTP; and

5. the BLM shall not begin any ground disturbing activities within the boundaries of any historic property until a NTP is issued for the property; and

6. a partial NTP may be issued for portions of the APE that are outside of the area that may affect historic properties.

VII. MONITORING AND REPORTING

A. Any signatory may monitor actions carried out pursuant to this PA. To the extent practicable, monitoring activities should minimize the number of monitors involved in the undertaking.

B. Reporting

1. A draft report of the identification, recordation, evaluation, treatment or other mitigative activities will be due to the BLM from any contractor within three (3) months after the completion of the fieldwork associated with the activity, unless otherwise negotiated.

2. BLM should review and comment on any report submitted by contractors within 30 calendar days of receipt.

3. The BLM shall submit the results of identification, recordation, evaluation, and treatment efforts, including discovery situations, and treatment plans to the SHPO for a 30 calendar day review and comment period.

4. If the SHPO fails to respond to the BLM within 30 calendar days of the certified receipt of a submission, the BLM shall presume concurrence with the findings and recommendations as detailed in the submission and proceed accordingly.

5. The BLM shall ensure that all final archaeological reports resulting from actions pursuant to this PA will be provided to the SHPO and the Tribes (pending official request and a Memorandum of Understanding Information Sharing Agreement with the BLM is in place at the time of request). All such reports shall be consistent with contemporary professional standards and the *Department of Interior's Formal Standards for Final Reports of Data Recovery Programs* (48 Federal Register 44716-44740).

VIII. OTHER CONSIDERATIONS

A. The BLM shall ensure that all its personnel and all the personnel of its contractors and subcontractors are directed not to engage in the illegal collection of historic and prehistoric materials. All parties shall cooperate with the BLM to ensure compliance with the Archaeological Resources Protection Act of 1979 (16 U.S.C. 470), as amended, on public lands and with Nevada Revised Statute (NRS) 383 for private Lands.

B. The BLM shall ensure that any human remains, grave goods, items of cultural patrimony, and sacred objects encountered during the undertaking are treated with respect. In coordination with this PA, human remains and associated grave goods found on public land will be handled according to the provisions of the Native American Graves Protection and Repatriation Act (NAGPRA), 25 U.S.C. 3001 et seq., and its implementing regulations (43 C.F.R. § 10). Human remains and associated grave goods on private land will be handled according to the provisions of NRS 383.

C. The BLM shall bear the expense of the identification, evaluation, and any treatment of historic properties directly or indirectly affected by project-related activity. Such costs may include, but not be limited to, pre-field planning, fieldwork, post-fieldwork analysis, research and report preparation, interim and summary report preparation, publications for the general public, and the cost of curating project documentation and artifact collections.

D. Information on the location and nature of cultural resources, and information provided by and considered proprietary by the Tribes, will be held confidential to the extent provided by Federal and state law.

IX. DISPUTE RESOLUTION

If any signatory to this PA, or an interested person, objects to any activities proposed pursuant to the terms of this PA, the BLM Schell Field Office (SFO) Manager shall consult with the objecting party and the SHPO to resolve the issue. If the BLM SFO Manager determines that the

objection cannot be resolved, they shall request the assistance of the BLM Nevada Deputy Preservation Officer and the Ely District Manager to resolve the objection. The BLM Ely District Manager's decision will be considered final.

The signatories may continue all actions under this PA that are not in dispute.

X. AMENDMENT

Any signatory to this PA may request that this PA be amended, whereupon the signatories will consult to consider such amendment. The amendment will be effective on the date a copy signed by all of the signatories is filed with the ACHP.

XI. TERMINATION

Any signatory to this PA may terminate the PA by providing thirty (30) days advance written notice with cause to the other signatories, provided that the signatories will consult during the period prior to termination to seek agreement on amendments or other actions that would avoid termination.

XII. EXECUTION

The execution of this PA and implementation of its terms is evidence that the BLM has taken into account the effects of this undertaking on historic properties and afforded the ACHP an opportunity to comment.

SIGNATORIES:

U.S. DEPARTMENT OF THE INTERIOR, BUREAU OF LAND MANAGEMENT

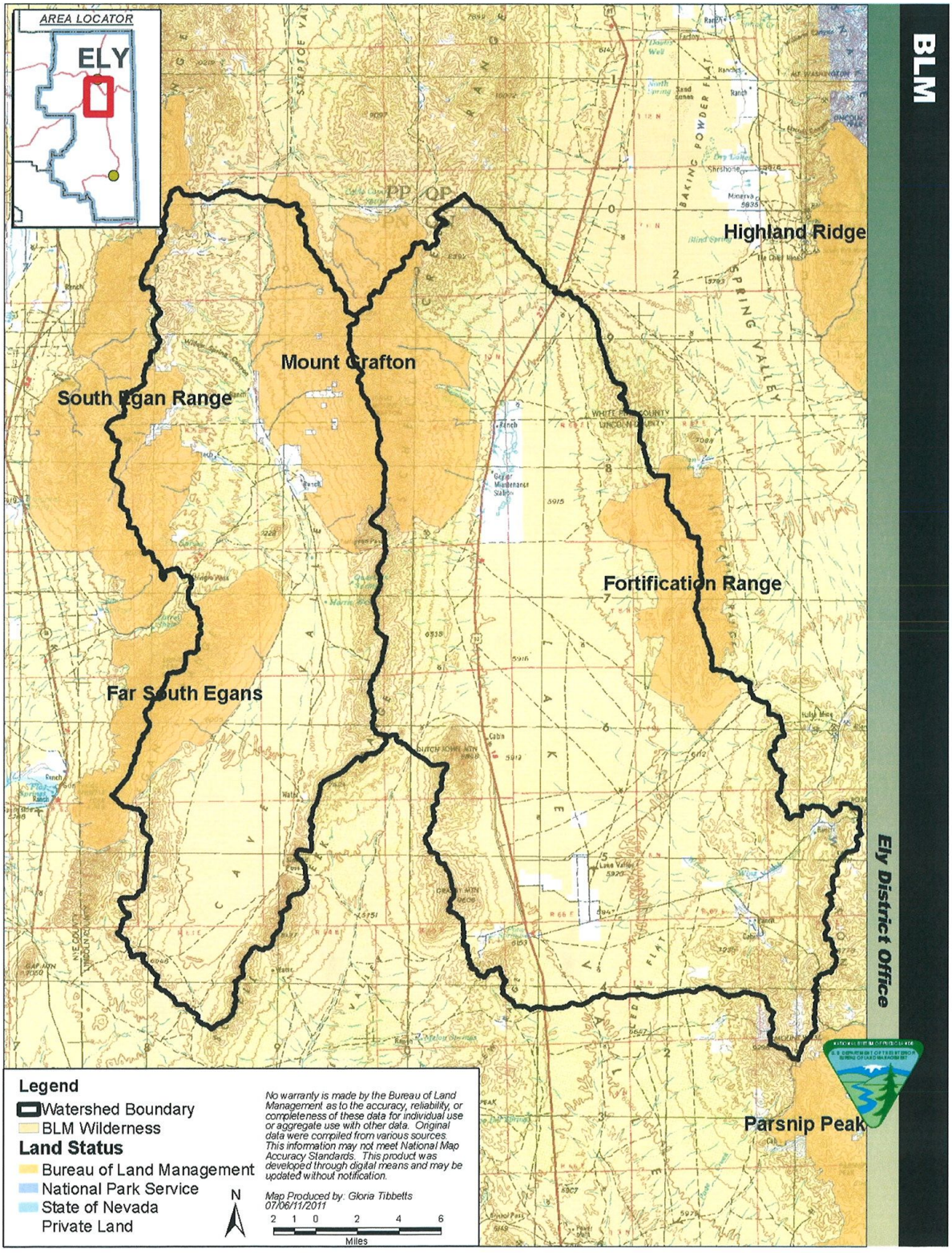
Mary D'Adversa, Schell Field Office Manager — Date 2/23/2012

NEVADA STATE HISTORIC PRESERVATION OFFICER

Ronald M. James, SHPO — Date 2-28-2012

APPENDIX A:

AREA OF POTENTIAL EFFECT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Highland Ridge
Mount Grafton
South Egan Range
Fortification Range
Far South Egans
Parsnip Peak
BLM
Ely District Office
Legend
Watershed Boundary
BLM Wilderness
Land Status
Bureau of Land Management
National Park Service
State of Nevada
Private Land
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: Gloria Tibbetts
07/06/11/2011
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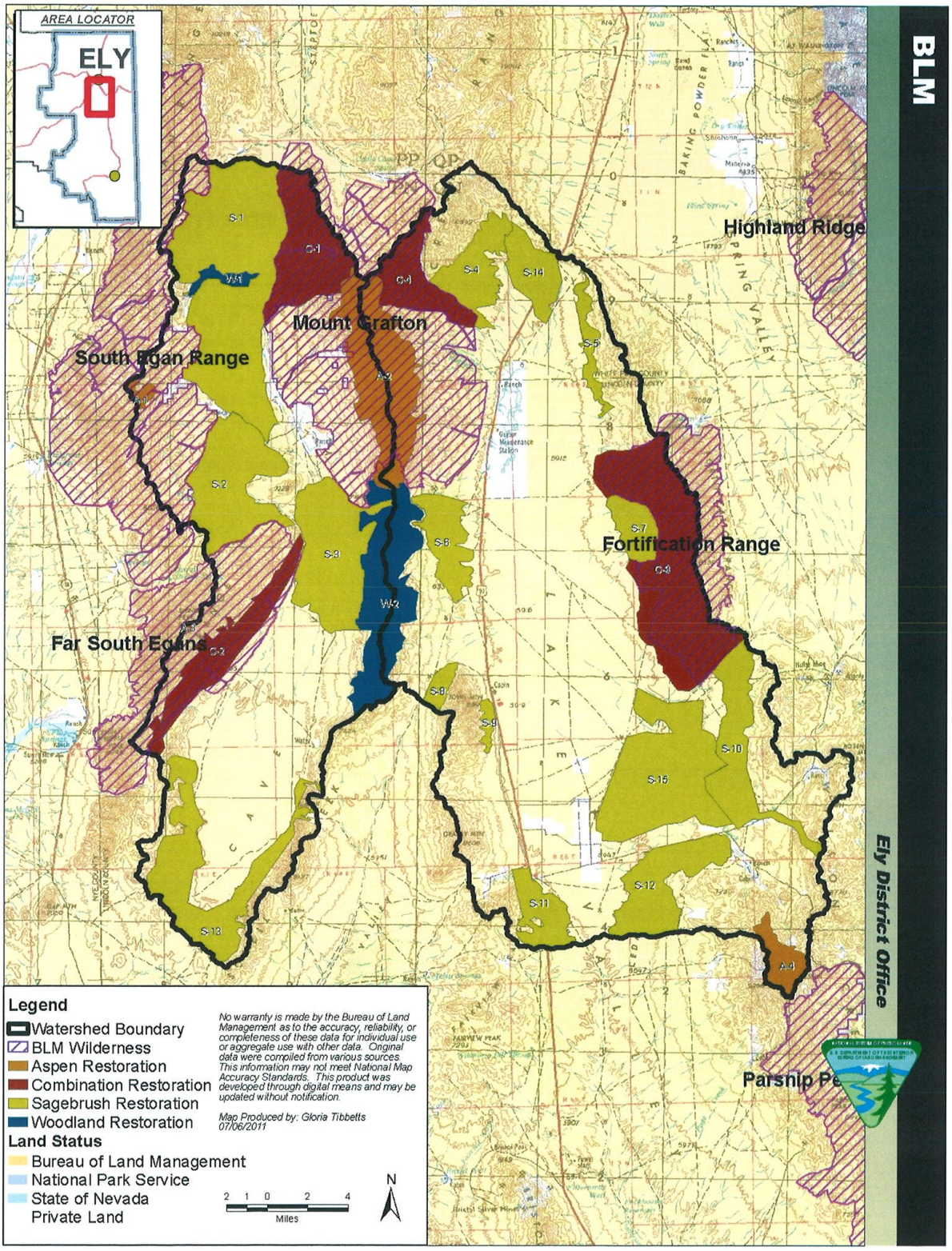
Miles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Fortification Range
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Parsnip Pe
Legend
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BLM Wilderness
Aspen Restoration
Combination Restoration
Sagebrush Restoration
Woodland Restoration
Land Status
Bureau of Land Management
National Park Service
State of Nevada
Private Land
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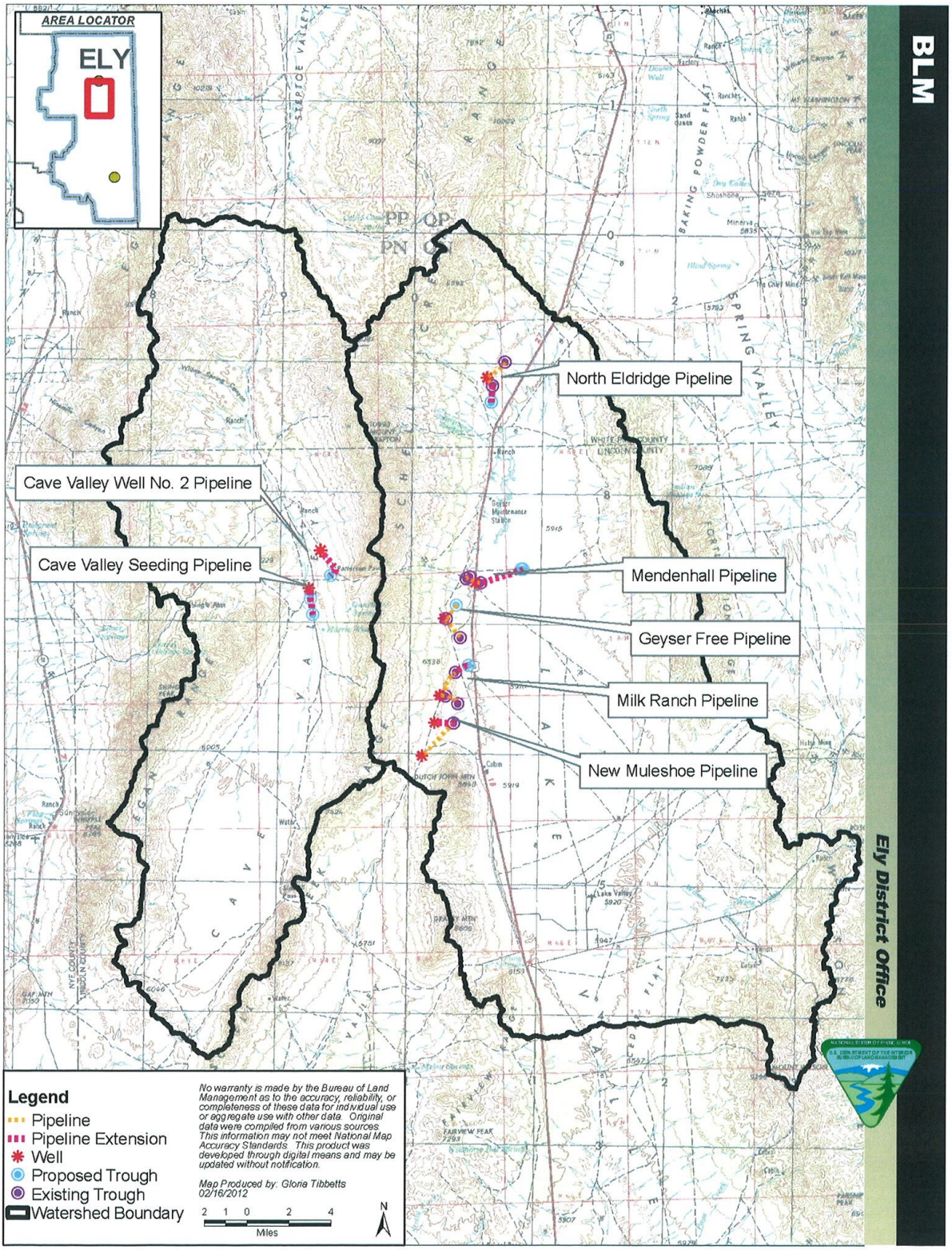
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Cave Valley Well No. 2 Pipeline
Cave Valley Seeding Pipeline
Mendenhall Pipeline
Geyser Free Pipeline
Milk Ranch Pipeline
New Muleshoe Pipeline
BLM
Ely District Office
Legend
Pipeline
Pipeline Extension
Well
Proposed Trough
Existing Trough
Watershed Boundary
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.
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02/16/2012
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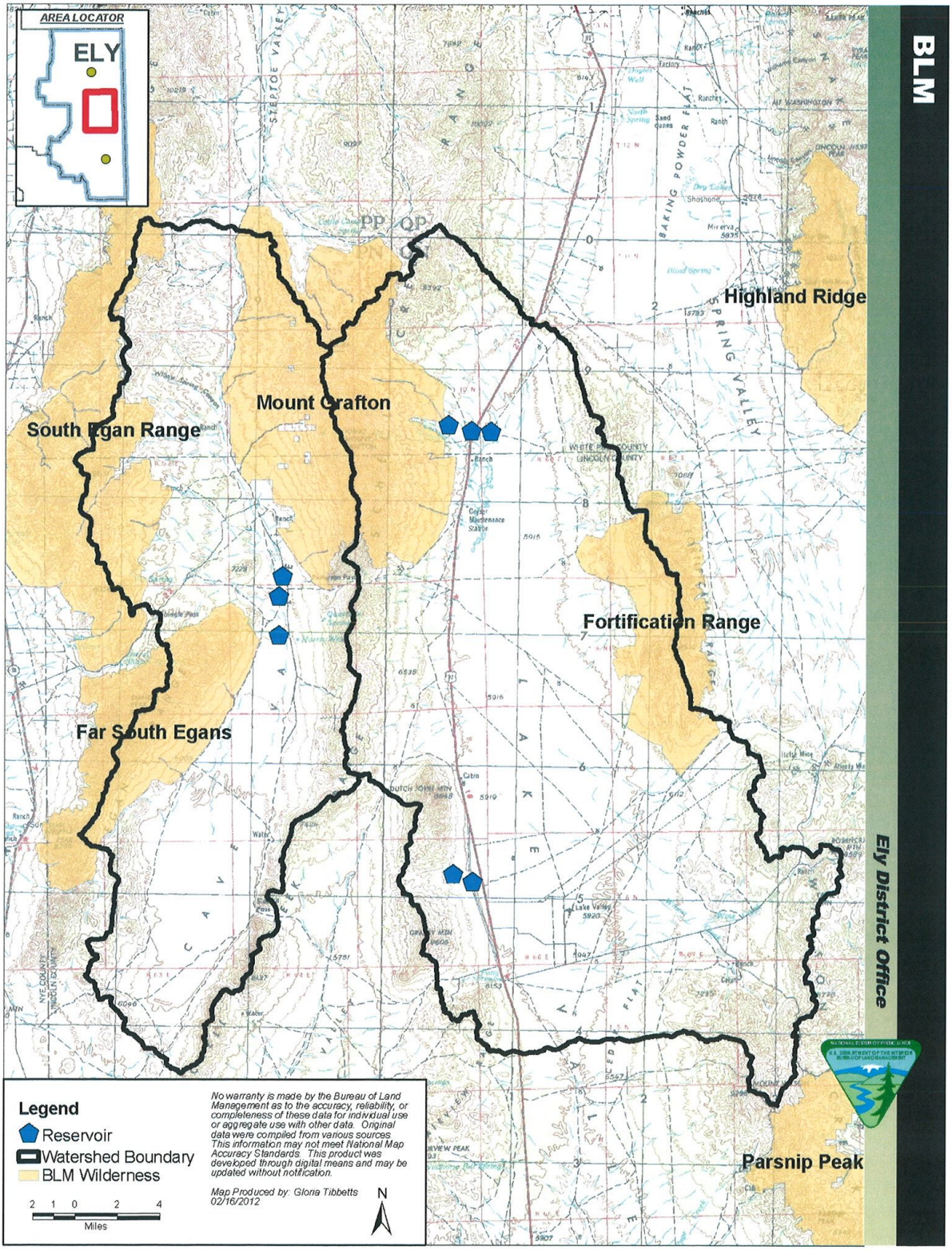
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Mount Grafton
South Egan Range
Fortification Range
Far South Egans
Parsnip Peak
Legend
Reservoir
Watershed Boundary
BLM Wilderness
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Miles
No warranty is made by the Bureau of Land Management as to 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: Gloria Tibbetts
02/16/2012
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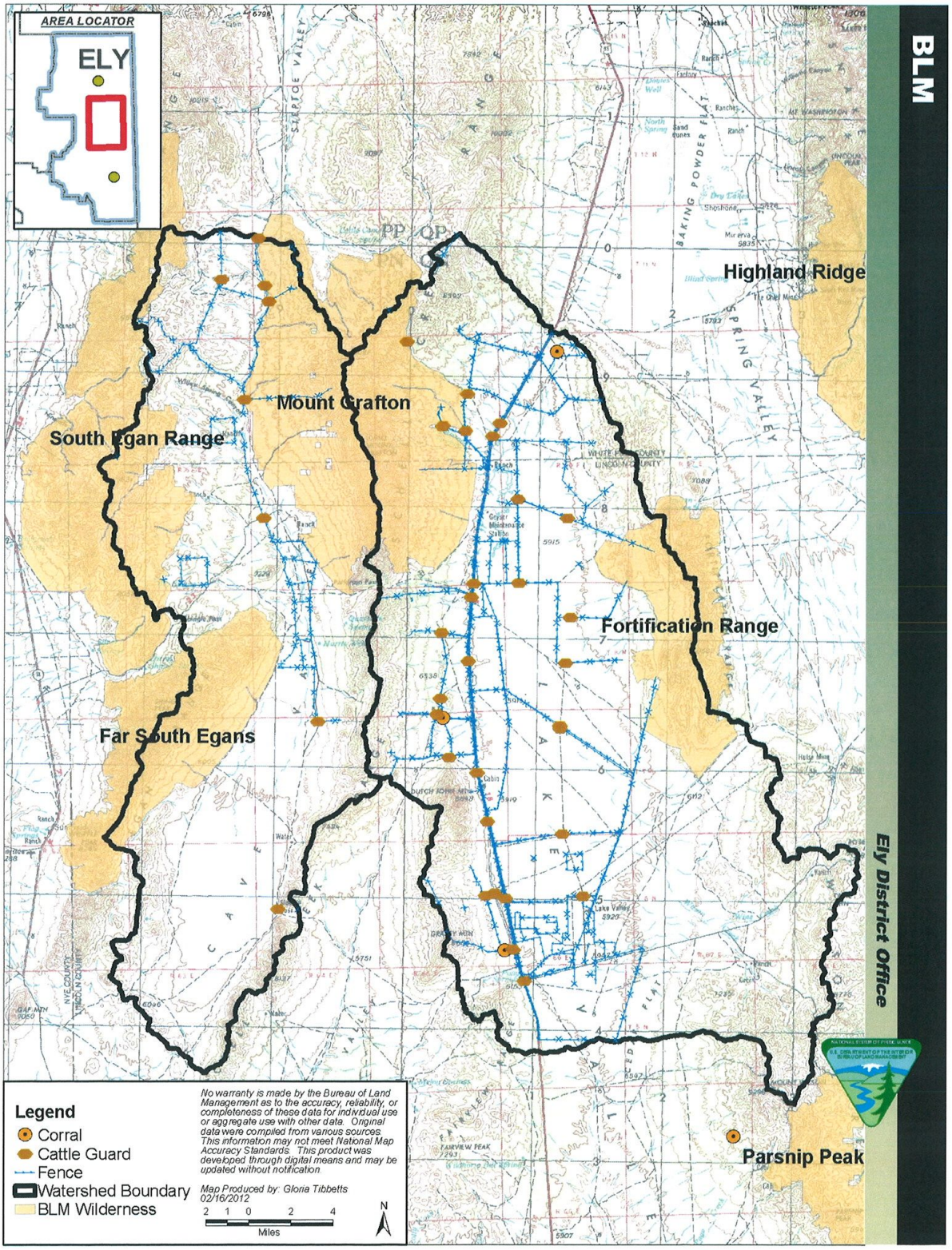
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Ely District Office
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Mount Grafton
South Egan Range
Fortification Range
Far South Egans
Parsnip Peak
Legend
Corral
Cattle Guard
Fence
Watershed Boundary
BLM Wilderness
No warranty is made by the Bureau 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: Gloria Tibbetts
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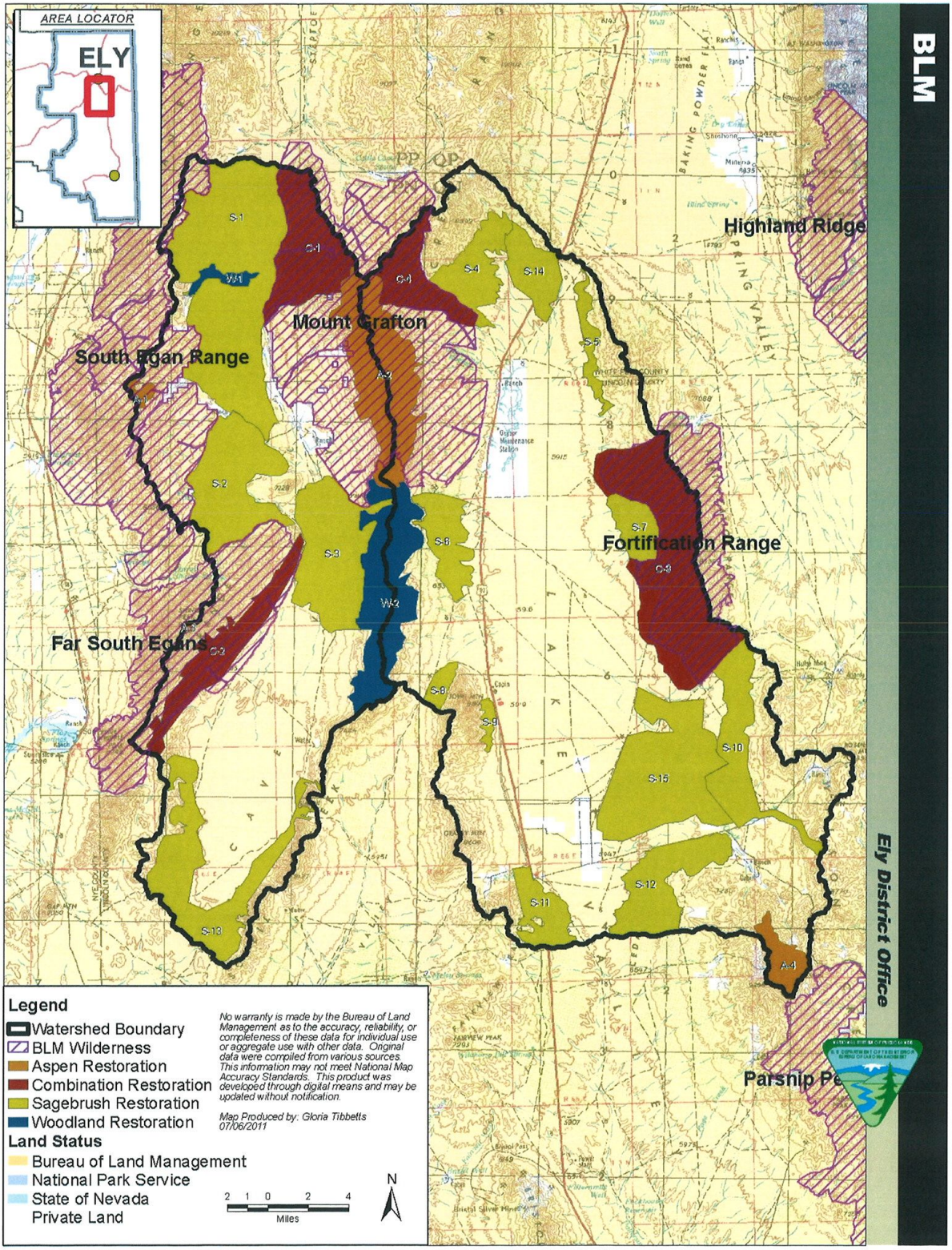
AREA LOCATOR
ELY
BLM
Highland Ridge
Mount Grafton
South Egan Range
Fortification Range
Far South Egans
Parsnip Pe
Ely District Office
S-1
C-1
W-1
C-4
S-4
S-14
S-5
A-2
S-2
S-3
S-6
C-3
W-2
A-3
S-7
C-5
S-8
S-9
S-10
S-15
S-12
S-11
S-13
A-4
Legend
Watershed Boundary
BLM Wilderness
Aspen Restoration
Combination Restoration
Sagebrush Restoration
Woodland Restoration
Land Status
Bureau of Land Management
National Park Service
State of Nevada
Private Land
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Map Produced by: Gloria Tibbetts
07/06/2011
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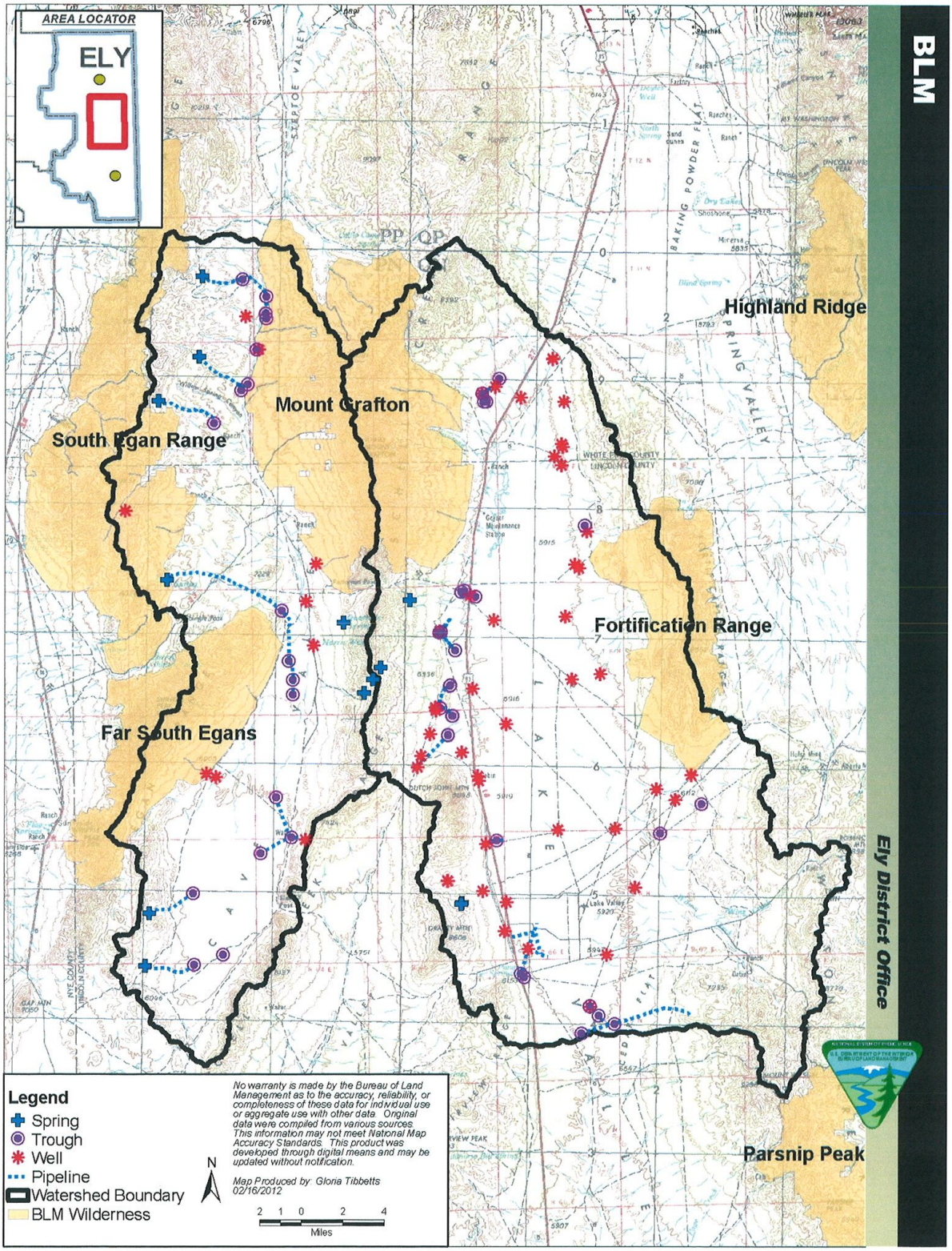
AREA LOCATOR
ELY
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Ely District Office
Legend
Spring
Trough
Well
Pipeline
Watershed Boundary
BLM Wilderness
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual use or aggregate 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: Gloria Tibbetts
02/16/2012
N
2 1 0 2 4
Miles

APPENDIX B:

DISCOVERY AND UNANTICIPATED IMPACTS PROCEDURES

In the event that previously unknown cultural resources are discovered within the area of potential effects of the undertaking, or should known resources be directly or indirectly impacted in an unanticipated manner, the following actions, at a minimum, would be initiated by the BLM in consultation with the signatories:

1. All activities will halt in the immediate vicinity of the discovery and all actions will be directed away from an area at least 100 meters in all directions from the point of discovery.

    a. A BLM cultural resources specialist (CRS) will be notified immediately by the contractors or BLM staff working on the project. The BLM will ensure that a CRS, with the proper expertise for the suspected resource type, is on-site as soon as possible.

    b. The BLM will initiate consultation with the appropriate parties, including the SHPO, other federal agencies, the Tribes, and interested parties as appropriate.

    c. In the event that a CRS or other necessary persons are not immediately available, BLM may be required to cover and/or otherwise protect the resource until such time that the appropriate parties can be present for inspection and/or evaluation.

2. Upon arriving at the site of the discovery, the CRS will assess the resource. At a minimum, the assessment will include:

    a. The nature of the resource (e.g., number and kinds of artifacts, presence/absence of features). This may require screening of already disturbed deposits, photographs of the discovery, and/or other necessary documentation.

    b. The spatial extent of the resource. This may require additional subsurface testing, mapping or inspection, as is appropriate to the resource.

    c. The nature of deposition/exposure. This may require interviews with construction personnel, other persons having knowledge concerning the resource or, in rare instances, the expansion of existing disturbances to establish the characteristics of the deposits.

3. Discoveries and unanticipated impacts to known resources will be managed according to the provisions of this PA and the Protocol. After consultation with the appropriate parties, BLM shall then make a determination of eligibility, treatment and effect. If necessary, BLM, in consultation with the SHPO, the Tribes and appropriate parties, shall ensure that a treatment plan is prepared following the guidance provided in this PA.

4. Any items covered by NAGPRA encountered in a discovery, or unanticipated impact situation, will be handled according to 43 C.F.R. § 10 or Nevada state laws, as appropriate.

5. All implementation activities in the area of the discovery will be halted until the BLM documents in writing that identification and treatment is complete and activities can resume.

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Appendix E. Public Comment Matrix

E.1.

Comment Number	Commenter	Comment	Response
1	Curt Leet	This would be a much better plan if all of the range Improvements were not being proposed.	Rangeland improvements are an important part of properly managing for multiple uses on the public land. The infrastructure they provide assists producers and the BLM in properly managing livestock operations and reduces negative impacts to other resources.
2	Curt Leet	I did not see any project costs or cost benefit analysis of the projects.	The specific cost of each project will be calculated at the time of implementation. Costs associated with tree removal and/or woodland restoration vary greatly depending on the type of methods being implemented and density of the trees in the restoration area. Implementation of similar restoration projects in the past have ranged for $50 to $1,200 per acre. Costs associated with sagebrush restoration also vary depending on the type of methods being implemented. Similar restoration projects in the past have ranged for $50 to $500 per acre.
3	Curt Leet	There was also no mention of the impacts of continued grazing by domestic livestock.	The impacts of livestock grazing are outside the scope of this document except where affected by the proposal, as documented in Section 4.7 Livestock Grazing. The impacts of livestock grazing have also been analyzed in the Ely Proposed Resource Management Plan and Final Environmental Impact Statement and addressed individually in Term Permit Renewals (TPR's).
4	Curt Leet	Page iv section 2.4.1.1 use a (S), (W), (e), and (A) to make It easier to understand the Treatment Units mentioned on page vii Appendix A	Noted.
5	Curt Leet	Page 1 section 1.1.2 not "in" but "administered by", saying the "office" sounds like you never get out.	Noted.
6	Curt Leet	Page 1 section 1.2, your description of the watershed starts in the middle and works to either Side, seem if you started on the west and went east or visa versa, it would make more sense.	Noted.

Comment Number	Commenter	Comment	Response
7	Curt Leet	Page 1 section 1.2 Alluvial fans is a more common term for basin and range landforms than Is "bajadas' and alluvial fans is used latter in the document. Bajadas Is a pretty word but generally only used In Arizona and New Mexico.	Noted.
8	Curt Leet	Page 1 section 1.2 Alluvial plains and alluvial flats would be a better landform term is in the valley bottoms (generally flowing perpendicular to the alluvial fans) or dissected alluvial fans if still up on the fans, whatever you are referring to, rather than "roiling terrain" for that land in the bottom of the valleys.	Noted.
9	Curt Leet	Page 1 section 1.2 the plans says "10,900 feet to the top of the South Schell Creek Mountain Range" That is a rather convoluted and inaccurate sentence, I would recommend saying "up to 11,735 feet on South Schell Peak in the southern end of the Schell Creek Range".	Noted.
10	Curt Leet	Page 1 section 1.2 last paragraph states "consists of sagebrush (Artemesia ssp.). This should be a site specific planning document and should mention there are 6 different species of sagebrush, low, black, Wyoming, basin, mountain, and Bonneville. Each species fills a different niche with specific habitat characteristics which influence resilience and response to vegetation treatments. As a result each species should be addressed individually. I feel the basin big sagebrush communities having the deepest soils in the plan area; have the greatest potential to respond to treatment.	Specific vegetation types are mentioned in Section 3.5.1 Rangeland Vegetation
11	Curt Leet	Page 2 Really a vague statement of time which I would like to see some clarification. I would like to see a mention of the slow response under natural conditions but rapid change In the event of disease or wildfire.	Noted. The time frame will be dependent on conditions on the ground at the time of proposed implementation and cannot be fully determined at this time.
12	Curt Leet	Page 3 section 1.3.1 Vegetation Treatments, For Simplification proposes and generalization I can see you are using the FRCC and BPS classes. It would be nice to see a correlation table with the Ecological Sites that are mapped in the Western White Pine Soil Survey.	Vegetation objectives in the Ely District Resource Management Plan were based on BPS classes. Therefore, this EA is using BPS classes to correlate with the overall objectives set in the RMP. Ecological Sites that are mapped in the Western White Pine Soil Survey are used to validate location of BPS classes. While Ecological Sites and BPS descriptions are both used to set objectives, this EA focuses on BPS and FRCC to correlate with the Ely District RMP.

Comment Number	Commenter	Comment	Response
13	Curt Leet	Page 5 last paragraph, I understand seral stages and like the reference to them but it Is unclear how the seral stages of the vegetation types relate to the FRCC or BPS which are mentioned in the previous paragraphs.	Seral stages or succession classes relate to the condition of the vegetation community as described in the biophysical setting (BPS). BPS Models describe the reference community as percent distribution of each s class across the landscape (e.g., 15% class A, 30% class B, 35% class C, 20% Class D). FRCC can be calculated by comparing the current distribution of s classes to the reference description as described in the BPS descriptions.
14	Curt Leet	Page 7 section 1.3.2 Range Improvements last paragraph, I do not see any multiple use benefit from the pipelines. You will be creating additional areas of concentrated use. There is no need to have water any closer together than every 2 miles. The cows can walk a mile to water and wildlife travel much farther than that. Place salt blocks where you propose the additional stock water tanks.	The proposed pipeline extensions and new pipelines are designed to distribute use across the allotment or use area were they reside. Since numbers of permitted livestock would not be increased in the area based on the new water improvements, the concentrated use at each improvement would be reduced. In some cases the proposed trough locations are within two miles of other troughs that are typically on the same pipeline.
15	Curt Leet	Page 19 section 2.3.1.7 I recommend resting the seeding for at least 2 years or until the vegetation objectives have been met and documented by monitoring data. 2 growing seasons is not enough time for the seedlings to be established enough to with stand grazing pressure, in this area, much of which receives less than 12 inches of annual precipitation.	The rest period in the EA has been extended from two growing seasons to two years or until stated objectives have been achieved.
16	Curt Leet	Page 20 section 2.3.1.9 Cadastral, what do you mean "where possible" Isn't there a fine for disturbing markers or is the BLM exempt?	Noted, all markers will be restored.
17	Curt Leet	Page 21 section 2.3.2 Vegetation Treatment Methods, it would be nice to see a table with the cost per acre for each proposed treatment method and the existing pounds per acre and potential increase in annual production resulting from the various treatment. Without a stated objective how will we know if the project objectives were met?	Costs associated with tree removal and/or woodland restoration vary greatly depending on the type of methods being implemented and density of the trees in the restoration area. Implementation of similar restoration projects in the past have ranged for $50 to $1,200 per acre. Costs associated with sagebrush restoration also vary depending on the type of methods being implemented. Similar restoration projects in the past have ranged for $50 to $500 per acre. The BLM does not manage habitat based on production. Production in pounds per acre is not the focus for habitat. Cover and diversity of vegetation normally correlates better

Comment Number	Commenter	Comment	Response
			to the objectives. The objectives are outlined for each treatment unit in sections 2.4.1.1, 2.4.1.2, 2.4.1.3, and 2.4.1.4.
18	Curt Leet	Page 21 section 2.3.2 Vegetation Treatment Methods, In this section discussing tree removal it would be nice to recommend the treatment areas be open to free use wood collection for 2 years prior to treatment. This could possibly save the tax payers in contract costs to implement the projects.	Thank you for the suggestion. While we can encourage the public to utilize wood in the treatment areas, regulations limit Free-Use permits to certain individuals and groups. Fire wood collection would be allowed in the area prior to the treatments and Section 2.3.1.6 Travel Restrictions outlines restrictions for fire wood collection.
19	Curt Leet	Page 31 Map 2.1 It would be nice to provide a map without any shading to see the existing features and contour lines. Use a labeling on this map and all of the maps, that is more transparent. Especially on the aerial photo base maps, it would be nice to see the aerial photography of the area being proposed for treatment.	Map 1.1 has been modified to provide a clearer representation of the base map.
20	Curt Leet	Page 33 Map 2.2 It is good to see at a broad scale that most of the seeding are proposed on the deeper soils in the valley bottoms, which have the greatest potential to respond to treatment.	Noted.
21	Curt Leet	Page 34 section 2.3.4 Vegetation Monitoring, There needs to be clarification stating post treatment monitoring will be conducted prior to any grazing to verify objects have been meet.	Section 2.3.4 Vegetation Monitoring has been modified to refer to the additional monitoring objectives and procedures already listed in Section 2.3.1.7 Grazing Restrictions.
22	Curt Leet	Page 40 Map 2.5, Make the shading more transparent to see more of the base map, or are you trying to hide something? The same comment applies to all of the maps in the document.	Noted.
23	Curt Leet	Page 43 section 2.3.7 Can I go down to Lake Valley and collect about 20 of those old power poles if they are still good enough to frame a pole barn? Would I need a permit to collect some, or trade, dropping more of them.	Implementation arrangements have not yet been determined for the removal of the poles, but could be discussed with the authorized officer following completion of the NEPA process.
24	Curt Leet	Page 45 Map 2.7 and the discussion that follows on page 46 and 47, it appears at this broad scale that much of the area you have identified as a combination treatment are sagebrush communities that is invaded or "infilled" by pinyon and juniper and would be a sagebrush community in its natural state if fire had been allowed to burn. What is your definition of a woodland community?	Some of the Combinations Treatment Units include more than one clear major vegetation type. Within these units, sagebrush communities occupied by pinyon and juniper trees would be treated to achieve the objectives for sagebrush communities. Woodland community identification was based on the objectives and description outlined in the Ely RMP and based on biophysical setting as described in LANDFIRE. Soil and ecological site mapping are also

Comment Number	Commenter	Comment	Response
			correlated with BPS descriptions to determine woodland community locations.
25	Curt Leet	Page 46 and 47 section 2.4.1.1, I see were you are referring to the seral stages but how is that related to the FRCC?	Seral stage can help determine what FRCC class is present (See discussion above for comment #13).
26	Curt Leet	Page 46 Table 2.3 Vegetation Types ... This table format is repeated throughout the rest of the document but it is hard to compare all of the various tables. Could you summarize them into a larger table?	Table 2.3 is a summarization of all the individual treatment units that are proposed to occur within the Sagebrush Restoration Treatment Units. The repeated table format later in the document is a summarization of all the individual treatment units occurring within a particular restoration unit (Woodland, Combination, and/or Aspen).
27	Curt Leet	Page 69 section 3.1, table 3.1 Floodplains, It seems that a lot of the vegetation treatments if successful would improve the herbaceous ground cover increasing interception of overload flow which would be a good thing and would decease runoff. Therefore I do not agree with the statement in the table 3.1 under Floodplains which states there will be "no change". I understand you are writing off one of those required NEPA elements, but you are not adequately describing the anticipated impacts.	The meaning of Floodplains as used in Table 3.1 relates to the Federal Emergency Management Agency's (FEMA) designation of flood zones which depict geographic areas of varying levels of flood risk. Flood zones reflect an integration of the physiographic characteristics of a basin and the severity and type of flooding that may occur in the area. It is believed that the proposed actions would not alter the FEMA flood zone designations in the project analysis area.
28	Curt Leet	Page 70 section 3.3 Soil Resources, very sadly this is very vague and lacking the detail needed to evaluate the project potentials. There should be a soil description for each of the vegetation communities you are proposing to treat. Also there is no comma in "very fine sandy loam".	Effects to soil resources are believed to be similar across all soil types found in the proposed project area. Soils may be characterized as being loamy in nature with some variability in silt and sand constituents depending on the topographic location.
29	Curt Leet	Page 70 section 3.5.1 Rangeland Vegetation is a land use not a vegetation community type. I believe it would be more appropriate to refer to the vegetation as Sagebrush Steppe. It Is good you finally refer to 5 of the 6 species of sagebrush in the watershed, but all of the rest of the document lumps it all together. It is unlikely any of the black sagebrush and very little of the low sagebrush communities would be cost effective to treat.	Rangeland Vegetation is a broad assortment of uncultivated vegetation community types that provide forage and browse for all grazing species. By this definition, rangeland vegetation is not limited to only sagebrush steppe but all biomes that support grazing species.
30	Curt Leet	Page 81 Map 3.2 Should show fences on this map. The symbol used on the map is generally used for roads.	The map has been updated.
31	Curt Leet	Page 82 section 3.10 LWCs, How does this relate to the designated wilderness areas? The wilderness areas should be plotted on this map as well.	The wilderness areas have been added to the map.

Comment Number	Commenter	Comment	Response
32	Curt Leet	Page 84 and 85 section 3.11 Wilderness use page breaks to get "Fortification Range Wilderness" and "Far South Egan Wilderness" on top of a page.	Noted.
33	Curt Leet	Page 137 Table A.1 What species of sagebrush? And the same comment applies to all of the previous tables using "sagebrush". Also this table is used so often it would be nice to see them summarized together to be to make some comparisons.	The Ely District RMP combined basin big sagebrush, Wyoming big sagebrush, mountain big sagebrush, and black sagebrush into a "sagebrush" category to describe the desired range of conditions (objectives). These sagebrush species are also included in the "sagebrush" designation in this document. The tables in Appendix A are summarized in Sections 2.4.1 and 2.5.1.
34	Curt Leet	Page 138 map A.1 repeating an earlier comment to decrease density of shading to be able to see the aerial photograph base.	Noted.
35	Curt Leet	There should be no need to replace existing pipelines since the maintenance of them should be part of the conditions of the existing grazing permits, to keep improvements maintained.	As stated in Section 1.3.2 Range Improvements, since many of the improvements were constructed prior to passage of the Federal land Policy and Management Act and the National Environmental Policy Act, analysis of the environmental impacts of the improvement were never conducted. Reconstruction is not considered maintenance of the project and requires ground disturbing activities. These actions require NEPA compliance and cultural analysis.
36	Curt Leet	The need to let more wildfires burn was mentioned, but this action would require expanding the prescribed burn prescriptions, which should be done in this document.	Approximately 80 percent of the watersheds are available for wildland fire for resource benefit. Additionally, approximately 50% of the Mount Grafton Fire Use Zone intersects the watersheds. The Mount Grafton Fire Use Plan emphasizes the objectives outlined in the FMP and acts as an operational implementation plan for wildland fire for resource benefit that occurs within this zone. Burn prescriptions would be developed to meet objectives set in this document in combination with fire management resources. Prescriptions would vary by vegetation type, topography, and fire location. Prescriptions would be included in the burn plan for each fire.

Comment Number	Commenter	Comment	Response
37	Curt Leet	The cost of the vegetation treatments and range improvements and the value of benefits received should be addressed.	The specific cost of each project will be calculated at the time of implementation. Costs associated with tree removal and/or woodland restoration vary greatly depending on the type of methods being implemented and density of the trees in the restoration area. Implementation of similar restoration projects in the past have ranged for $50 to $1,200 per acre. Costs associated with sagebrush restoration also vary depending on the type of methods being implemented. Similar restoration projects in the past have ranged for $50 to $500 per acre.
38	Curt Leet	This plan fails to make any mention of the Biological Soil Crust (BSC) which is being impacted by the proposed treatments.	Biological Soil Crust has been addressed in Section 4.2 Soil Resources.
39	Curt Leet	The BLM has made presentations to Public Land Users Advisory Committee (PLUAC) that Transportation systems would be addressed In these Watershed Restoration Plans. There is a really weak mention of the existing roads in this document. This plan should address and what roads would be closed and which roads would be left open.	Although the plan was scoped to potentially include a travel management plan for both watersheds, that process will be delayed to provide for more focused public involvement. A travel management plan will be completed at a later date.
40	Natural Resource Conservation Service (NRCS) - Justin Feeman	The NRCS in Caliente would like to expand upon our current projects in the Bailey Creek/Winz Creek areas and Wilson Creek areas of Lake Valley… We would like to connect the islands of brush work in the Winz Creek watershed to increase continuity between our projects. I feel like doing brush removal in riparian corridors would be the most economical way of managing the encroached Pinyon and Juniper. If corridors were brushed, fuel continuity would be reduced so that wildfires could be managed more easily for improved post fire results. (map provided)	Treatment Unit S-10 has been modified to include the proposed areas. Treatment methods include Mechanical Tree Removal and Hand Cutting as primary treatment methods depending on slope. Additional coordination between the NRCS and BLM will need to occur before the NRCS can move forward with implementation.
41	Natural Resource Conservation Service (NRCS) - Justin Feeman	Corridors of treatment would also improve the continuity of understory species beneficial to a number of wildlife species, including Sage Grouse. Meadow areas have been shown to be heavily utilized by Sage Grouse during Late Brood-Rearing times of the year typically in late Summer. If meadow sites can be improved, the areas around them are more likely to be utilized for nesting and winter use. Apart from Sage Grouse, improved meadow areas would improve habitat for many wildlife species and improve livestock distribution by increasing forage.	Section 2.3.2.1 Methods for Tree Removal or Woodland Restoration has been modified to reflect removal of pinyon pine and juniper trees around riparian areas as a priority.

Comment Number	Commenter	Comment	Response
42	Natural Resource Conservation Service (NRCS) - Justin Feeman	Improving understory species around drainage areas would allow riparian areas to increase vegetation and improve their stability in the case of a large runoff after a large wildfire or other disturbance. Given past experiences following fires in other drainages, I feel that being proactive is the best plan in order to keep these systems intact and prevent restoration following events.	The proposed actions intend to treat vegetation with the goal of obtaining a community and density of vegetation appropriate to the climate and topography and to stabilize riparian and upland soils.
43	Natural Resource Conservation Service (NRCS) - Justin Feeman	On another note, the NRCS Caliente Field Office is very interested in working with permitees to improve livestock watering facilities on BLM allotments. In the Lake Valley Preliminary EA mention was made to improve or install a number livestock watering troughs around the Geyser Ranch and other areas. Examples have been seen by other states of the BLM working with the NRCS to create a few basic strategies that would reduce the amount of NEPA work necessary to improve watering on BLM Allotments. The problem of poor livestock distribution due to lack of water affects the BLM and the NRCS alike. If livestock distribution can be improved on BLM land, our producers can increase the health and gain of their livestock, and the BLM can maintain a healthier ecosystem by distributing and diluting the impacts of livestock across an allotment.	The EA is intended to improve vegetation conditions through a variety of methods including rangeland improvements. The ability to analyze the impacts of multiple proposed projects in one document allows the BLM, NRCS, and interested publics the opportunity to address needs and concerns in a streamlined approach. The BLM looks forward to working with all agencies and interested publics in future watershed projects.
44	Nevada State Historic Preservation Office - Rebecca Palmer	The SHPO has reviewed the subject document and supports it as written. The SHPO reminds the Bureau of Land Management to attach the executed Programmatic Agreement for the subject undertaking with any decision documentation.	Included as Appendix D in the EA.
45	BLM National Landscape Conservation System - Christopher V. Barns	I think you need to include a "prescribed fire only" alternative for Units A-1, -2, and -3. I saw nothing in the EA that justified cutting, other than the vague reference to loss of desired values. If what you're trying to do is reestablish aspen (and you can demonstrate that there actually has been fire exclusion on Mt. Grafton, for example), why not just burn? Aspen loves fire. If there are some other values at risk, they should be more explicitly cited. Cutting before burning makes this seem more like gardening than wilderness stewardship -- and you will remember Zahniser said we should be "guardians, not gardeners." Actually, I'm not sure what the "natural fire	Alternative B was modified to state that implementation of restoration activities within treatment units in wilderness areas would be accomplished through wildland fire for resource benefit only. The success of these fires is often dependent on conditions in the area that may contribute or detract from their ability to burn. For example, sometimes aspen stands will not burn unless the conifers within them are lying on the ground to create ground fuel to carry the the fire. Treatments would be designed to address the specific conditions that are present on the

Comment Number	Commenter	Comment	Response
		only" alt would be rejected for these units, so perhaps that could be better explained.	ground at the time of implementation in order to achieve the stated objectives.
46	BLM National Landscape Conservation System - Christopher V. Barns	As for the fence, the purpose is not clear. Is it to prevent herbivory by cattle or by elk? Makes a HUGE difference in the design and degree of permanence of the fence. If elk, are the elk native or introduced by NDOW? (Or perhaps a reintroduction, the years of their absence helping the aspen to establish to an unnatural degree?) Answers to these questions are essential to determining what kind of fence-- if any -- is appropriate, yet I didn't see these answers in the EA.	Elk was reintroduced in 1932 after the population was exterminated around 1900. Fencing has been removed from analysis in this EA, if fences are necessary to complete implementation of the proposed treatments they will be considered in a separate NEPA and MRDG analysis.
47	BLM National Landscape Conservation System - Christopher V. Barns	Since you are proposing a use prohibited by Section 4(c) of the Wilderness Act, and this EA is not site-specific (or action-specific) enough, you do realize that another EA will be necessary before taking action in the Wilderness, right?	Modified proposed action (removal of several proposed treatments in wilderness) included in EA, and further site-specific analysis for 4c prohibited uses included in EA.
48	Friends of Nevada Wilderness - Shaaron Netherton	It is difficult to get a sense of exactly what you would be doing in these wilderness areas. We generally support efforts to correct impacts to the wilderness areas naturalness that have occurred through management actions in the past.	Clarified wilderness discussion in EA, and included MRDG for full wilderness rationale regarding need for action. See Appendix F of a separate document for MRDG.
49	Friends of Nevada Wilderness - Shaaron Netherton	We have some very serious concerns about prescribed fires in all but very limited situations. With this year's drought and climate warming in general, we are seeing cheat grass appearing in higher and higher elevations. We are very concerned that fire may open up either new areas for cheat grass or increase smaller populations that already exist. While seeding with natives is good in theory with warmer and drier weather the success of these seedings maybe limited.	Fire would be allowed in areas that could recover (e.g., areas with sufficient understory). Treatments, including both proescribed fire burn plans and seeding plans, would be designed based on the conditions on the ground at the time of implementation in order to address usch concerns as invasive weeds and reseeding success.
50	Friends of Nevada Wilderness - Shaaron Netherton	In the larger watershed, we are concerned with how specifically you will keep new vehicles routes from appearing as a result of the extensive treatments you seem to be proposing. Since it seems many of the treatment areas are also directly adjacent to wilderness the potential of increased illegal vehicle use and associated increased spread of weeds should be addressed and mitigated.	Section 2.3.1.6 Travel Restrictions has been modified to prohibit off-road travel by the public for collection of fuel wood.

Comment Number	Commenter	Comment	Response
51	Friends of Nevada Wilderness - Shaaron Netherton	Aspen Restoration: Healthy aspen stands and healthy riparian areas are certainly key components of wilderness and extremely important for wildlife (especially sage-grouse). We support efforts in wilderness to remove with hand saws the conifers or other vegetation that may be taking over the aspen stands. We also could support some temporary fencing to exclude cattle or other grazers that are responsible for eating young aspen and keeping the stand from regenerating. We would even support some limited prescribed fire.	Noted. Fire will be the primary tool used to treat aspen stands and others will be used if approved through the appropriate minimum tool and NEPA analyses.
52	Friends of Nevada Wilderness - Shaaron Netherton	PJ Control: We recognize that past management practices have increased the spread of pinyon and juniper and as a result lessened quality sagebrush communities. We support some removal of smaller trees especially those that can easily be cut with hand saws with no vehicle support.	Noted. Fire will be the primary tool used to treat aspen stands and others will be used if approved through the appropriate minimum tool and NEPA analyses.
53	Friends of Nevada Wilderness - Shaaron Netherton	As planning for these specific projects move forward we would be very interested in a field trip to see exactly what is being proposed in these wilderness areas. At this point we do not have enough details to fully support the proposal.	A site visit was conducted for interested parties on April 9, 2012.
54	Friends of Nevada Wilderness - Shaaron Netherton	Also, would you be willing to send us a map of the areas you have identified as having wilderness character as a part of this process. The map in the EA leaves something to be desired. It appears they are labeled as Forest Service lands. We would also be fine if you email the shape files for those areas to us if that is easier for you.	A map was emailed on March 30, 2012 and the map was updated in the EA.
55	Southern Nevada Water Authority - Zane Marshall	After reviewing the Preliminary EA, SNWA would like to extend support for the Bureau of Land Management's (BLM) proposed efforts to restore vegetation resources and watershed health on public lands. We concur there is an immediate and vital need for watershed restoration. The proposed treatment methods are appropriate given the current status of the sagebrush plant community in the area. The success of the Proposed Project will greatly improve watershed function and restore native habitats for wildlife and livestock.	Noted.

Comment Number	Commenter	Comment	Response
56	Southern Nevada Water Authority - Zane Marshall	The project description for the Proposed Project does not include a timeframe for conducting the work proposed. Therefore, SNWA recommends that the schedule be: 1) included in the National Environmental Protection Act (NEPA) document, and 2) sent to SNWA prior to implementation of the project. Timing of the Proposed Project may impact SNWA's ROW operations in the valleys including, but not limited to, hydrologic and biologic monitoring, pedestrian surveys, and construction.	The reason for the scale of the analysis on a watershed basis is to allow for a more immediate response as funding becomes available and as conditions change on the ground. Implementation projects will be selected depending on the conditions on the ground in any given year. Standard notification procedures will be followed several months prior to treatment implementation for all permittees and right-of-way holders as the treatment plans are developed.
57	Southern Nevada Water Authority - Zane Marshall	SNWA has been granted a ROW (N-78670) for two sites in Cave Valley, for a total of four monitoring wells. Although both sites are in treatment area Unit S-13, one well site is in the area identified for mechanical sagebrush suppression and the second well site is in the area identified for mechanical tree removal. Per the ROW stipulations, SNWA is responsible for long term care of noxious weeds and restoration on the ROW sites. Both well sites have been seeded and weed control has been conducted at each site yearly. Therefore, to ensure future success, BLM will need to coordinate with SNWA on activities that occur both on land adjacent to and within the ROW.	Noted. The BLM will coordinate with all permittees and right-of-way holders prior to implementation of the treatments.
58	Southern Nevada Water Authority - Zane Marshall	SNWA also has a conservation easement in northern Cave Valley (1,480 acres in seven parcels) and has been monitoring the ecological condition. SNWA supports BLM's proposed vegetation treatments on Units A-2, C-1, and S-1 near the conservation parcels.	Noted.
59	Southern Nevada Water Authority - Zane Marshall	The conditions at the Cave Valley Wash parcel are indicative of the rest of the upper watershed, in that at least one large erosional gully has formed in the bottom of Cave Valley Wash. The areas surrounding the conservation easement is administered by the BLM and is characterized by pinyon and juniper expansion into sagebrush shrublands. The expansion of pinyon and juniper is a contributing factor to the wash erosion problem. SNWA believes that shrubland restoration should be placed as a priority in the upper Cave Valley treatment area Units A-2, C-1, and S-1, so that the wash conditions can improve.	Noted, priorities will be determined as funding becomes available for implementation.

Comment Number	Commenter	Comment	Response
60	Southern Nevada Water Authority - Zane Marshall	The Brush Spring parcel is part of an expansively large area in the watershed where pinyon and juniper are expanding onto the sagebrush shrublands. SNWA also believes that the prescribed fire treatment in area Unit A-2 should be made a priority.	Noted, priorities will be determined as funding becomes available for implementation.
61	Southern Nevada Water Authority - Zane Marshall	Lastly, since fire is being prescribed near residents, livestock, and land managed for conservation purposes; SNWA requests notification one to two weeks prior to any work occurring in Units A-2 and C-1.	This type of notification procedure occurs when site-specific burn plans and treatment plans are developed. SNWA will be added to the notification list.
62	Southern Nevada Water Authority - Zane Marshall	The NEPA document must address the impacts of grazing restrictions on existing grazing permit holders. SNWA's El Tejon ranch has associated BLM and U.S. Forest Service sheep grazing allotments, including the Shoshone Unit Trail (Allotment Number 10140) and Wilson Creek Allotment (Allotment Number 01201). SNWA's sheep trail along Shoshone Unit Trail from Spring Valley through Lake and Patterson valleys to the Wilson Creek allotment as part of the EI Tejon Ranch term grazing permit. During permitted dates in the spring and fall, SNWA uses the Shoshone Unit Trail to access the southern and northern allotments of SNWA's grazing permits to complete year-round livestock operations.	These details would be addressed through the grazing decision process several months prior to treatment. The decision will include mitigation measures, terms, and conditions specific to the permittees within the area. In this process consultation, coordination, and cooperation will be utilized to address individual concerns as well as a comment, protest, and appeal process.
63	Southern Nevada Water Authority - Zane Marshall	Shoshone Unit Trail (Allotment Number 10140) - SNWA has a trail permit for the Shoshone Unit Trail, which is approximately 60 miles in length and located immediately adjacent to Highway 93 on the west side. This area coincides with treatment area Units S-6, S-9, S-11, and S-14 on the Proposed Action map. SNWA is permitted to use this area in the spring and fall. The Shoshone Unit trail goes through three sagebrush shrubland areas that are now densely covered with pinyon and juniper trees. These areas are: 1) S-11 the intersection of Kicksmiller Summit road and Highway 93 around Pony Springs; 2) S-9 the area east of the Dutch John Range; and 3) S-6 the area along Highway 93 around Patterson Pass. SNWA suggests making these three areas priorities for the proposed pinyon and juniper treatments because in the current ecological condition, SNWA sheep cannot trail through the trees. Rather they must be trailed in the barrow ditch adjacent to Highway 93 - a very hazardous situation for sheep and vehicles travelling on the highway. Each area needs to be restored to a sagebrush ecosystem as the pinyon and juniper are deteriorating	Restoration priorities will be based on available funding, conditions, and multiple use objectives.

Comment Number	Commenter	Comment	Response
		watershed health by reducing grass, forb and shrub cover, as well as increasing bare ground.	
64	Southern Nevada Water Authority - Zane Marshall	If wildfire were to occur in these areas, restoration would be very difficult. Implementing planned treatments before a fire event would give the area a greater chance of restoration success.	Noted.
65	Southern Nevada Water Authority - Zane Marshall	In the northern portion of Lake Valley, the Shoshone Unit trail crosses through sagebrush treatment area Unit S-14. SNWA supports the proposed sagebrush treatment in Unit S-14 and the proposed pinyon and juniper treatment in Units S-6, S-9, and S-11 with two modifications. First, SNWA suggests staggering the treatment by two to three years within each treatment unit, allowing a maximum of 20-30 percent of the area to be treated at any given time. Also consider not closing the treatment area for two years following treatment, instead allow only trailing.	Treatments will be based on BLM objectives and available funding. The management of livestock after treatments is addressed in Section 2.3.1.7 Grazing Restrictions .
66	Southern Nevada Water Authority - Zane Marshall	SNWA agrees and supports the grazing restrictions from Section 2.3.17 as both necessary and effective for successful vegetative restoration of treatment areas; however, these grazing restrictions should not affect sheep grazing. Limiting sheep grazing in treatment area is ineffective and in fact sheep grazing can be beneficial to restoration.	Seeded areas and those not meeting vegetation objectives would be closed to all domestic grazing for a minimum of two years or until vegetation objectives are met.
67	Southern Nevada Water Authority - Zane Marshall	First, sheep are intensely managed and can be herded around the restored or treated areas; therefore the entire grazing allotment does not need to be closed for a two-year period following seeding.	These details would be addressed through the grazing decision process several months prior to treatment. The decision will include mitigation measures, terms, and conditions specific to the permittees within the area. In this process consultation, coordination, and cooperation will be utilized to address individual concerns as well as a comment, protest, and appeal process.
68	Southern Nevada Water Authority - Zane Marshall	Second, during restoration, sheep can be trailed through an area with minimal impacts. Pursuant to SNWA's Shoshone Unit Trail permit, sheep must be moved along the trail at a minimum of 5 miles per day, a rate which results in minimal impact as the sheep graze lightly only while walking.	Seeded areas and those not meeting vegetation objectives would be closed to all domestic grazing for a minimum of two years or until vegetation objectives are met.

Comment Number	Commenter	Comment	Response
69	Southern Nevada Water Authority - Zane Marshall	Third, trailing sheep through the restoration area can be mutually beneficial by providing a non-mechanical method to incorporate seeds in the soil. In fact, within the Shoshone Unit Trail, if BLM notifies SNWA and coordinates the scheduled seeding time, SNWA can trail sheep through the seeded area and use the hoof action to incorporate the seeds as the sheep trail through.	Seeded areas and those not meeting vegetation objectives would be closed to all domestic grazing for a minimum of two years or until vegetation objectives are met.
70	Southern Nevada Water Authority - Zane Marshall	Wilson Creek Allotment (Allotment Number 01201) - SNWA uses the Wilson Creek (Atlanta) grazing allotment for sheep from November 1 through January 31. This grazing allotment is covered by two treatment areas, Units S-1O and S-15. The proposed treatment for Unit S-1O is Tebuthiuron tree suppression and mechanical tree removal, while for Unit S-15 it is mechanical suppression for sagebrush. SNWA agrees and supports the proposed sagebrush treatments for Units S-1O and S-15 as they are necessary and should be effective; however, the standard grazing restrictions should not be implemented for sheep grazing.	Seeded areas and those not meeting vegetation objectives would be closed to all domestic grazing for a minimum of two years or until vegetation objectives are met.
71	Southern Nevada Water Authority - Zane Marshall	SNWA's sheep are intensely managed and can be herded treatment or restoration areas; therefore the entire grazing allotment does not need to be closed around the for sheep.	Seeded areas and those not meeting vegetation objectives would be closed to all domestic grazing for a minimum of two years or until vegetation objectives are met.
72	Southern Nevada Water Authority - Zane Marshall	Additionally, the Preliminary EA states that 60-70 percent of area in Unit S-15 is to be treated, SNW A requests that no more than 20 percent of the area be treated in anyone year. Treatments to create a mosaic in the area should be staggered so as not to disrupt too much area affecting sage grouse and to allow for SNW A to continue using the allotment pasture while treatments occur and areas are seeded and re-establishing.	Sections 2.3.1.1 Timing Restrictions and 2.3.1.2 Treatment Design Restrictions outline some of the timing limitations. Treatment implementation would also be subject to the most current limitations related to sage grouse policy. Livestock usage of seeded areas is addressed in Section 2.3.1.7 Grazing Restrictions.
73	Southern Nevada Water Authority - Zane Marshall	The EA does not disclose a dependable schedule for the proposed work. The year and/or season of the Proposed Project has the potential to impact users of the public land. Therefore, SNWA respectfully requests a complete schedule be added to the NEPA document.	Implementation projects will be selected depending on the conditions on the ground in any given year and available funding. Standard notification procedures will be followed several months prior to treatment implementation for all permittees and right-of-way holders as the treatment plans are developed.
74	Southern Nevada Water Authority - Zane Marshall	Additionally, a formal work notification process is needed to eliminate potential problems and enable others to adjust to BLM's plans.	Standard notification procedures will be followed several months prior to treatment implementation for all permittees and right-of-way holders as the treatment plans are developed.

Comment Number	Commenter	Comment	Response
75	Southern Nevada Water Authority - Zane Marshall	SNWA requests that the NEPA document state that affected land and grazing permit holders will be notified by mail six months prior to the commencement of work. This timeframe will allow grazing permit holders the appropriate time to make needed adjustments to their yearly grazing plan.	Section 2.3.1.7 Grazing Restrictions indicates that coordination with the affected livestock permittees within the allotments being treated would be conducted prior to any treatment occurring. The exact specifics of notification procedures are considered an administrative action that are addressed outside the NEPA document. Your request will be forwarded to the appropriate party involved with implementing the treatments. Annual coordination with your assigned rangeland management specialist will also provide proper notification of treatment actions.
76	Southern Nevada Water Authority - Zane Marshall	The NEPA document should also state that notification of upcoming treatments would also be provided to SNW A, and other affected parties, one to two weeks prior to initiation of work to confirm the schedule and that livestock have been removed from the immediate area.	Section 2.3.1.7 Grazing Restrictions indicates that coordination with the affected livestock permittees within the allotments being treated would be conducted prior to any treatment occurring. The exact specifics of notification procedures are considered an administrative action that are addressed outside the NEPA document. Your request will be forwarded to the appropriate party involved with implementing the treatments. Annual coordination with your assigned rangeland management specialist will also provide proper notification of treatment actions.
77	Red Rock Audobon Society - John Hiatt	In general, we find that the EA is vague and doesn't provide sufficient detail to allow the public to determine exactly what is being proposed nor does it provide sufficient detail to allow a BLM manager (who may not have much on the ground experience in the area) to make an informed decision about the treatments being proposed and how effective they will be.	Each treatment will be designed to achieve the objectives stated in Chapter 2. Designs will also comply with the restrictions stated in Section 2.3.1 Treatment Restrictions Common to All Treatments in order to limit the impacts within the level analyzed in Chapter 4.
78	Red Rock Audobon Society - John Hiatt	There is no rationale offered for why Alternative B, the Reduced Ground Disturbance Alternative, is even included, other than that NEPA analyses are supposed to include alternatives to the proposed action.	Alternative B was developed in response to comments received during the public scoping period.

Comment Number	Commenter	Comment	Response
79	Red Rock Audobon Society - John Hiatt	Section 2.3.1.6, Travel Restrictions: The first sentence says that no new roads will be created during project implementation, and that no off-road travel for harvest of fuelwood will be allowed unless authorized, but the last bullet point states that off-road travel could be authorized for up to five years. If off-road travel for harvest of fuelwood is possibly going to be authorized then there needs to be a rehabilitation plan to reclaim the roads that will inevitably be created by this activity.	Section 2.3.1.6 Travel Restrictions has been modified to prohibit off-road travel by the public for collection of fuel wood.
80	Red Rock Audobon Society - John Hiatt	Section 2.3.3.2, Seeding Management Plan: This section talks about the appropriate percentage of sagebrush cover for nesting Sage Grouse but fails to address the fact that the old seeding project areas are almost totally devoid of forbs, which are essential forage for both Sage Grouse hens and chicks. The sagebrush plants recolonizing these old seedings are young and vigorous and would provide good Sage Grouse habitat were it not for the almost complete absence of forbs. If this is indeed a Watershed Restoration Plan then the lack of forbs in crested wheatgrass seedings needs to be addressed.	Section 2.3.3.2 Seeding Management Plan has been modified to state that a seed mix of native species including forbs that are beneficial to sage grouse would be used.
81	Red Rock Audobon Society - John Hiatt	Section 3.9, Recreation: The next to last sentence in this paragraph talks about five different groups of motorized recreation users. The next sentence states: "Some users prefer roads,….,and some prefer the freedom to traverse the environment" One might easily interpret this sentence to imply that cross-country motorized travel is permitted in this area. It is my understanding that the Ely District RMP severely restricts cross-country motorized travel. The wording in this section needs some clarification.	Noted. The statement has been modified to reflect existing limitations for motorized travel.
82	Red Rock Audobon Society - John Hiatt	Map 3.3, p. 83. The legend and color coding on this map are not consistent with the title.	Noted. The map has been modified.

Comment Number	Commenter	Comment	Response
83	Red Rock Audobon Society - John Hiatt	Section 3.1.4, Climate Change: The brief paragraph devoted to this topic acknowledges the existence of a report suggesting that climate change is occurring in the southwestern United States and that predicted warmer and drier conditions may cause changes in vegetative distribution in the area. In fact, there is much evidence that climate change is occurring and that there is a significant possibility that the increasing variability in precipitation and temperature from year to year that we are seeing may affect the success of activities proposed in this EA. At a minimum, this section needs to state that climate change will be considered as part of adaptive management strategies over the time frame of this project. One of the predicted and experienced impacts of climate change is more intense rain events. Nowhere in the document is there a mention of post-treatment erosion problems that may be associated with increased rainfall intensity in future years.	The adaptive management approach will consider all conditions on the ground and trends in precipitation, drought conditions, and other factors at the time of implementation. Treatments will be designed to address these conditions as well as potential issues following implementation, including erosion and establishment of invasive species, whether related to climate change or some other causal factor.
84	Red Rock Audobon Society - John Hiatt	Section 4.10.1, Wilderness, Impacts from Proposed Action: This section talks about using Minimum Tool guidelines if (emphasis added) prescribed fire is used. Since only prescribed fire and hand cutting are being proposed for use in Designated Wilderness Areas and many thousands of acres in these areas are being proposed for treatment it is disingenuous to use the word "if". Also, the term hand cutting needs to be defined. Does it mean cutting with hand tools or does it include use of chain saws? Since the same term is used for work in both Wilderness and non-Wilderness areas this needs to be clarified.	Section 2.3.2.1.3 Hand Cutting has been modified to reflect the clarification in wilderness areas.
85	Red Rock Audobon Society - John Hiatt	This section doesn't acknowledge that there is any significant difference in management strategy for Wilderness and non-Wilderness lands other than the minimum tool requirement and that herbicides would not be used in Wilderness. I would expect at least some discussion of the intent of the Wilderness Act and the fact that most of the Wilderness Area lands are the highest elevation lands in the area and have not been subject to past human modification to the same extent as the benches and valley bottoms, including fire suppression.	Much of this information is discussed in Section 3.11 Wilderness. The elevation within the wilderness areas varies. Most of the Combination Restoration Units are located on bench lands, which have seen historic and current livestock use.

Comment Number	Commenter	Comment	Response
86	Red Rock Audobon Society - John Hiatt	Section 4.12.1.1, Fuels, Impacts from Alternative A, Proposed Action: The second sentence of the third paragraph states that: …, this analysis is based on the assumption that the treatments would be completed over a ten year period." Given the huge acreage proposed for treatment this seems incredibly optimistic. I would suggest that this statement be changed to read: …"over a ten year or longer period".	For the purposes of analysis, a specific timeframe was selected. However, the section has been modified to acknowledge that the timeframe may be longer.
87	Red Rock Audobon Society - John Hiatt	P. 115, second paragraph and Table 4.3: There is no acknowledgement that most of the High Elevation Mixed Conifer ecotype occurs in Designated Wilderness Areas and that most natural fires are either very small (single tree fires) or are stand replacement fires and that we don't have a lot of experience with prescribed fire in this ecotype.	Table 4.3 describes the results expected from implementation the proposed treatments, regardless of designated land (e.g., wilderness) status. Prescribed fires have occurred in the last six years in this ecotype on the Ely District (e.g., Bull Canyon).
88	Red Rock Audobon Society - John Hiatt	Section 4.14.2.3, Lands with Wilderness Characteristics: The statement that: "The vegetation treatments ….impact the naturalness of the area along with other human caused imprints such as mining, roads and renewable energy development into the future." suggests that the preparers of this document may not be familiar with Secretary's Wildland Policy.	Section 4.14.2.3 Lands with Wilderness Characteristics has been modified.
89	Red Rock Audobon Society - John Hiatt	Overall we are somewhat disappointed with the lack of specificity in this document, which we understand to be the last opportunity for public input into the planning process. I would certainly appreciate an opportunity to spend some time in the field with some of the individuals responsible for implementing this plan so that I might have a better idea of exactly what will take place on the ground.	A site visit was conducted for interested parties on April 9, 2012.
90	Nevada Department of Wildlife - Alan Jenne	To provide maximum protections for sage grouse Section 2.3.1.1 should extend the temporal and spatial restrictions to protect sage grouse nesting and brood rearing habitats. Studies indicate that by buffering leks by 4 miles you can protect 75 to 85 percent of the associated nesting hens. Additionally, NDOW recommends extending protections for early brood rearing until July 15th and incorporating protections for sage grouse winter habitats where necessary.	Section 2.3.1.1 Timing Restrictions was modified to reflect the four-mile buffer and extended brood rearing season.
91	Nevada Department of Wildlife - Alan Jenne	NDOW would also advise that mechanical treatment methods for sagebrush restoration should avoid the use of block treatments and strive for more natural mosaic patterns.	This requirement is listed in Section 2.3.1.2 Treatment Design Restrictions.

Comment Number	Commenter	Comment	Response
92	Nevada Department of Wildlife - Alan Jenne	Additionally, we recommend that all fence replacement should utilize wildlife friendly design, having a 3 strand fence with a maximum height of 40 inches and a lower smooth wire at least 18 inches off the ground. Sturdier fence designs should be focused to those areas where livestock pressure is expected.	Fences would be constructed to the standard BLM specifications for a four strand fence with a bottom smooth wire at least 18 inches off the ground. Big game jumps would be installed in areas that are identified to have frequent deer and elk crossings.
93	Nevada Department of Wildlife - Alan Jenne	NDOW supports the restoration plan and asks that our area biologists be involved as site specific treatment plans are developed.	Thank you for your support and we will involve your area biologist in the site specific treatment plans.
94	Ely Shoshone Tribe - Alvin Marques	The Tribe's primary concern with the Draft EA and the associated restoration plan is regarding the use of Tebuthiuron. The Proposed Action (Alternative A) would include chemical treatments within Sagebrush Restoration Units using Tebuthiuron for the suppression of pinyon-juniper and sagebrush. EA at 45. Tebuthiuron would be applied aerially from small aircraft. EA at 23. The Draft EA states that a No Chemical Alternative was considered but not analyzed (EA at 62), making the reader think that both Alternative A and B use chemical treatments. However, no chemical treatments are identified in Alternative B either in the text or in Appendix A. Clarification should be added in Alternative B text that specifically states that no chemical treatments of Tebuthiuron will be used. Alternative B is essentially a 'no chemical treatment alternative' and thus clarification in Section 2.7.1 must be provided that indicates the No Chemical Alternative was not analyzed because Alternative B is a no chemical alternative. Without these various clarifications on the chemical treatments, the Draft EA prevents the reader from having a fair and reasonable opportunity to review and comment on what is actually being proposed in this NEPA document.	Section 2.5.1 states: "The treatment methods that are proposed within each of the treatment units have been modified to reflect the basis of this alternative, which is the exclusion of all heavy mechanical and chemical treatments in all areas."
95	Ely Shoshone Tribe - Alvin Marques	No analysis was provided on the impacts of Tebuthiuron on water quality. EA at 65. Table 3.1 in states the rationale for dismissing water quality/groundwater impact analysis. This rationale only addresses how sediments might enter surface waterways. The rationale fails to consider, in any way, how Tebuthiuron may impact groundwater, springs, or other surface water. It is inconceivable that the application of Tebuthiuron over thousands of acres of land would result in maintaining pre-application water quality conditions.	Tebuthiuron would not impact riparian areas, as a buffer zone of non-treatment would be included near riparian areas. Adherence 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.would ensure no

Comment Number	Commenter	Comment	Response
		The rationale provided above does not preclude an analysis of impacts on water quality from the use of chemical treatments. Therefore, the Draft EA must be revised to analyze potential impacts on water quality from the chemical treatments and from all reasonably foreseeable future actions in the cumulative impacts analysis.	impacts to riparian, spring, and other water sources. This analysis was also added to Section 4.3.1 in the EA.
96	Ely Shoshone Tribe - Alvin Marques	The analysis of impacts on air resources is fatally flawed for (1) No impact analysis of air pollutants from construction/operation equipment exhaust(including criteria pollutants, ozone precursors, and greenhouse gas emissions): Tailpipe emissions from construction/operational/mechanical equipment have equipment specific emissions based on equipment type, number of each type of equipment, and estimated hours of operation. No estimates are provided for the amount and type of operation/mechanical equipment, nor are the hours of operation of that equipment disclosed of such equipment. Thus the Draft EA fails to disclose impacts on air resources due to tailpipe emissions. This is an error of noncompliance.	The Air Quality in the project analysis area is designated as either not classified, unclassifiable/attainment, or better than National Standards. No portions of the proposed project area are within areas of nonattainment. Impacts related to "air pollutants from construction/operation equipment exhaust(including criteria pollutants, ozone precursors, and greenhouse gas emissions)" are immeasurable for the actions in the proposed project. A one- or two-pass system with two vehicles traversing treatment areas is not believed to introduce air pollutants in measureable amounts into the atmosphere over the limited land areas proposed.
97	Ely Shoshone Tribe - Alvin Marques	The analysis of impacts on air resources is fatally flawed for (2) No impact analysis of fugitive dust generated during mechanical operations of chaining,mastication, other mechanical methods (dixie harrow, roller chopper, mowing): Fugitive dust is lofted into the air by construction/operational/mechanical equipment. That dust would result from all of the mechanical treatments, including chaining, mastication, and other treatments. The fugitive dust emissions must be calculated for this project and can be estimated basedon the acreage of land undergoing mechanical treatments and the time period of those treatments. Procedures exist for estimating these fugitive dust emissions. Failure to disclose these air quality impacts is an error of noncompliance.	The EA disclosed that exposure or displacement of soils could result in a susceptibility to wind or water erosion. The amount of soil material mobilized as dust by machinery would be immeasurable given the design and scope of the proposed treatments.

Comment Number	Commenter	Comment	Response
98	Ely Shoshone Tribe - Alvin Marques	The analysis of impacts on air resources is fatally flawed for (3) No impact analysis of windblown dust generated due to wind erosion of disturbedsurfaces (treatments): Windblown dust (wind erosion) will occur due to the mechanical and other disturbances within the treatment areas. In addition to fugitive dust that is lofted into the air from construction/mechanical equipment, the mechanical treatments will disturb the soil and vegetation and leave the ground surface susceptible to wind erosion. Windblown dust is not addressed for prescribed fires; the Draft EA only discloses the particular matter impacts of air from the actual prescribed fires, not the windblown dust that can occur following the prescribed fires. The EA must calculate windblown dust emissions based on total estimated acres of land disturbed from both mechanical and prescribed fire treatments. Those calculations can be based on TSP emission factors for wind erosion (see USEPA guidance such as USEPA 1998 and WRAP 2006). Failure to disclose windblown dust emissions is an error of noncompliance and therefore must be included in the EA. The failure to disclose windblown dust emissions prevents the Tribe from having a fair and reasonable opportunity determine how air quality impacts may affect tribal interests and resources both within the project area and beyond the project boundaries.	The EA disclosed that exposure or displacement of soils could result in a susceptibility to wind or water erosion. The amount of soil material mobilized as dust by machinery would be immeasurable given the design and scope of the proposed treatments.
99	Ely Shoshone Tribe - Alvin Marques	The analysis of impacts on air resources is fatally flawed for (4) No analysis of greenhouse gas emissions from prescribed fires: Greenhouse gases would be emitted from prescribed fires. These greenhouse gas emissions can be calculated based on land surface area, vegetation communities, applicable combustion and fire data. The BLM failed to include estimates of greenhouse gas emissions. This omission and lack of disclosure is an error of noncompliance and prevents the Tribe from having a fair, reasonable, and full opportunity to review the Draft EA and its potential impacts.	Prescribed fire greenhouse gas emissions are short-term and may vary widely from year to year. If/when specific prescribed fires are proposed, the appropriate governmental agencies will review all air emissions sources and short-term and long-term impacts when considering site-specific permits. Emissions will be determined by smoke modeling for the specific prescribed burn to be implemented. If the level of smoke reaches levels established by the state, the prescribed burn area would be reduced. Greenhouse gas emissions will not exceed thresholds established by NV Dept. of Air Quality.

Comment Number	Commenter	Comment	Response
100	Ely Shoshone Tribe - Alvin Marques	The analysis of impacts on air resources is fatally flawed for (5) No analysis of toxic chemicals released from burning exotic species: Noxious weeds may become toxic when burned. The Draft EA provides no disclosure or analysis of this potential impact. Nor does the Draft EA address what potential effect this may have for people near prescribed burn treatment areas.	The amount and type of prescribed burning involving noxious/exotic plants is unknown at this time. When/if prescribed burns are considered this type of information will be evaluated when designing the project. The noxious weeds that are known to occur in the project areas have not been found to being toxic when burned. Chemicals released from burning noxious weeds are usually no different than native vegetation.
101	Ely Shoshone Tribe - Alvin Marques	The analysis of impacts on air resources is fatally flawed for (6) No analysis of conformity requirements in nonattainment areas: No discussion in the Draft EA is provided regarding the conformity requirements or conformity reviews for the project area. The Draft EA fails to disclose whether any areas within the project basins are designated as nonattainment or maintenance for CO, PMIO, ozone, S02 or other pollutants. Estimated emissions must be compared with the emissions threshold for conformity determinations as published by USDOE 2000.	Section 3.2 Air Quality discloses the designation for the project area and that the project would not lead to a change.
102	Ely Shoshone Tribe - Alvin Marques	The analysis of impacts on air resources is fatally flawed for (7) No impact analysis of air pollutants from Tebuthiuron chemical treatments: Air quality would be impacted from the use of Tebuthiuron, especially when released from flying aircraft. The amount of Tebuthiuron lost to the atmosphere from spraying must be calculated based on the amount of chemicals used, land area that would be sprayed, distance from ground surface, air temperature, humidity, and wind, among other factors. The Draft EA makes no effort to disclose how air resources would be impacted from the use of chemical treatments of Tebuthiuron. The Draft EA also fails to disclose any other chemicals that would be part of the Tebuthiuron mixture.	The pellet-form of the herbicide Tebuthiuron would be used. In pellet-form there is immeasurable loss of chemical to the atmosphere. This analysis was also added to Section 4.1.1 in the EA.

Comment Number	Commenter	Comment	Response
103	Ely Shoshone Tribe - Alvin Marques	The Draft EA must analyze and disclose impacts on air resources (quality). The BAPC General Air Dispersion Modeling Guidelines (revised December 2010) should be utilized, where data from the nearest meteorological station can be analyzed to develop wind frequency distribution plots and a spatially explicit air dispersion model. Those models can demonstrate where air pollutants are likely to be dispersed in addition to providing other key information.	At this time it is unknown the exact amount of particulates produced or anticipated dispersal direction created by a prescribed fire due to varied conditions (i.e. fuel loading, moisture content, wind speed, etc.). When site specific prescribed burn plans are developed this type of information would be included.
104	Ely Shoshone Tribe - Alvin Marques	No analysis was provided on the impacts of using Tebuthiuron chemical treatment programs on cultural resources, Native American values or religious concerns. EA at 65. The BLM's rationale for excluding an analysis of impacts on places of cultural and religious importance stated:There are no known Native American traditional religious sites or cultural sites of importance within the proposed project area that would be affected as a result of this project. There are no 'Indian Trust Assets' identified within the Ely District. EA at 65.This statement is false. For example, our Tribe has previously informed the BLM, and BLM is fully aware, that Cave Valley Cave is a place of cultural and religious importance to the Tribe.	The statement on Page 69 was modified to reflect avoidance of any identified Native American traditional religious sites or cultural sites of importance.
105	Ely Shoshone Tribe - Alvin Marques	Moreover, Tribal members use areas within Cave Valley and Lake Valley for hunting and gathering plants for food, medicinal, and religious purposes. The use of Tebuthiuron would be an impact on all of those uses and places of cultural/religious importance.	Based on a fact sheet prepared for the U.S. Forest Service by Information Ventures, Inc. (1995), products formed by the break-down of Tebuthiruron are low in toxicity. Break-down products are found in low concentrations, which would not pose a hazard to the environment. Tebuthiuron usually does not last within the soil longer than fifteen months, because plant roots metabolize it.
106	Ely Shoshone Tribe - Alvin Marques	Particularly, Cave Valley Cave is located just east of the very southern tip of Treatment Unit S-I (Map A.I) EA at 127. The proposed use of Tebuthiuron covers a large area within that treatment unit and Cave Valley Cave is may be downwind from chemical treatment zones. The BLM failed to address/disclose that impact.	To prevent herbicide drift outside of the project area, implementation would be conducted during calm weather conditions. A buffer zone of no application would also be incorporated around the project boundary to ensure that the Tebuthiuron only falls within the project area.

Comment Number	Commenter	Comment	Response
107	Ely Shoshone Tribe - Alvin Marques	The Draft EA provides no discussion and disclosure of how Tebuthiuron may be transported via wind, and what areas those transports may impact. The Tribe is greatly concerned about the use of chemical herbicides to eliminate pinyon-juniper and sagebrush areas because the Tribe has collected pine nuts and other plants in the region for long periods of time. Moreover, the Tribe is planning onconducting pine nut harvests in the future in nearby areas to this restoration project. Unfortunately, the Draft EA provides no information that would allow the Tribe to evaluate whether Tebuthiuron may be transported via wind into areas that the Tribe uses or may use in the future for pine nut harvesting, hunting, and gathering plants for medicinal and religious purposes. The BLM's failure to disclose how, where, and how much Tebuthiuron may be transported precludes the Tribe from having a fair and reasonable opportunity to evaluate impacts on interests and resources that the Tribe uses.	Tebuthiuron is applied in pellet form as opposed to liquid form. This aids in reducing drift that occurs during application. To further reduce drift, application would only occur when weather conditions are calm. A buffer zone of no application would also be incorporated around the project boundary to ensure that tebuthiuron pellets only fall within the proposed treatment area. These precautions are also outlined in Section 2.3.2.2.4.1 Tebuthiuron.
108	Ely Shoshone Tribe - Alvin Marques	Because of the potential impacts on plants that tribal members use for food, medicine, and religious purposes, the Tribe urges the BLM to reject Alternative A for this EA. Alternative B apparently does not contain chemical treatments and therefore would greatly reduce impacts associated with the aerial spraying of chemical treatments and many of our Tribe's concerns with the project. The BLM is required to select the alternative that minimizes environmental impacts but still allows for the purpose and need of the project. Alternative B with no chemical treatments must be the selected alternative.	Noted.
109	Ely Shoshone Tribe - Alvin Marques	The Tribe expects that the BLM will address these concerns in the Final EA for this restoration project. The Tribe also urges the BLM not to use chemical treatments (Tebuthiuron) during the course of this proposed restoration project or any other similar restoration projects currently or in the future. The Tribe requests that the BLM submit to us any plans for the use of Tebuthiuron or other chemical herbicide applications in order for our Tribe to ensure the health, safety, and protection of tribal members.	Noted, the BLM will coordinate with the Tribe to provide any requested information regarding Tebuthiuron usage.

Appendix F. Minimum Requirements Decision Guide

F.1.

Please reference a separate PDF document on the EPlanning website. The Minimum Requirements Decision Guide (MRDG) 1) analyses whether or not an action is necessary in Wilderness and 2) determines the minimum "tool" or method for completing the project.