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Environmental Assessment

Lowry Hazardous Fuels Reduction and Ecosystem Enhancement Project



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PURPOSE AND NEED

Background

The Lowry Wildfire Risk Reduction and Ecosystem Enhancement Project (Lowry Project) proposes to reduce expansion of pinyon pine and Utah juniper stands through the use of prescribed fire and mechanical treatment on 4500 acres. The project area is located on the east side of Ward Mountain from Lowry Canyon to Sawmill Canyon near Ely in White Pine County, Nevada.

The project area consists primarily of pinyon pine and Utah juniper stands with interspersed sagebrush/grass and mountain brush community types. The pinyon pine and Utah juniper stands are in various Phases of development. Miller et. al. 2008, define the early, mid, and late Phases of pinyon-juniper woodland successional development as:

Phase I - trees are present but shrubs and herbs are the dominant vegetation that influence ecological processes on the site.

Phase II - trees are co-dominant with shrubs and herbs and all three vegetation layers influence ecological processes on the site.

Phase III - trees are the dominant vegetation and the primary plant layer influencing ecological processes on the site.

The area consists of a large amount of Phase II pinyon-juniper woodlands that are the primary focus for treatment and minor amounts of Phase I and III. As Phase I and II vegetation types

transition into Phase III over time, the understory shrubs, grasses and forbs are lost and canopy cover of these tree species closes. The loss of the ground vegetation and increased density of canopy fuels marks a shift in biomass to crown fuels which can significantly affect fire behavior. The more tree dominated the woodlands become, the less likely they are to burn under moderate conditions. In addition, Phase III pinyon-juniper has lost much of the seed sources



Heavy fuel loading in the Lowry area poses a high wildfire risk.

necessary to regenerate understory herbs, grasses and shrubs following a disturbance. (Miller et. al. 2008)

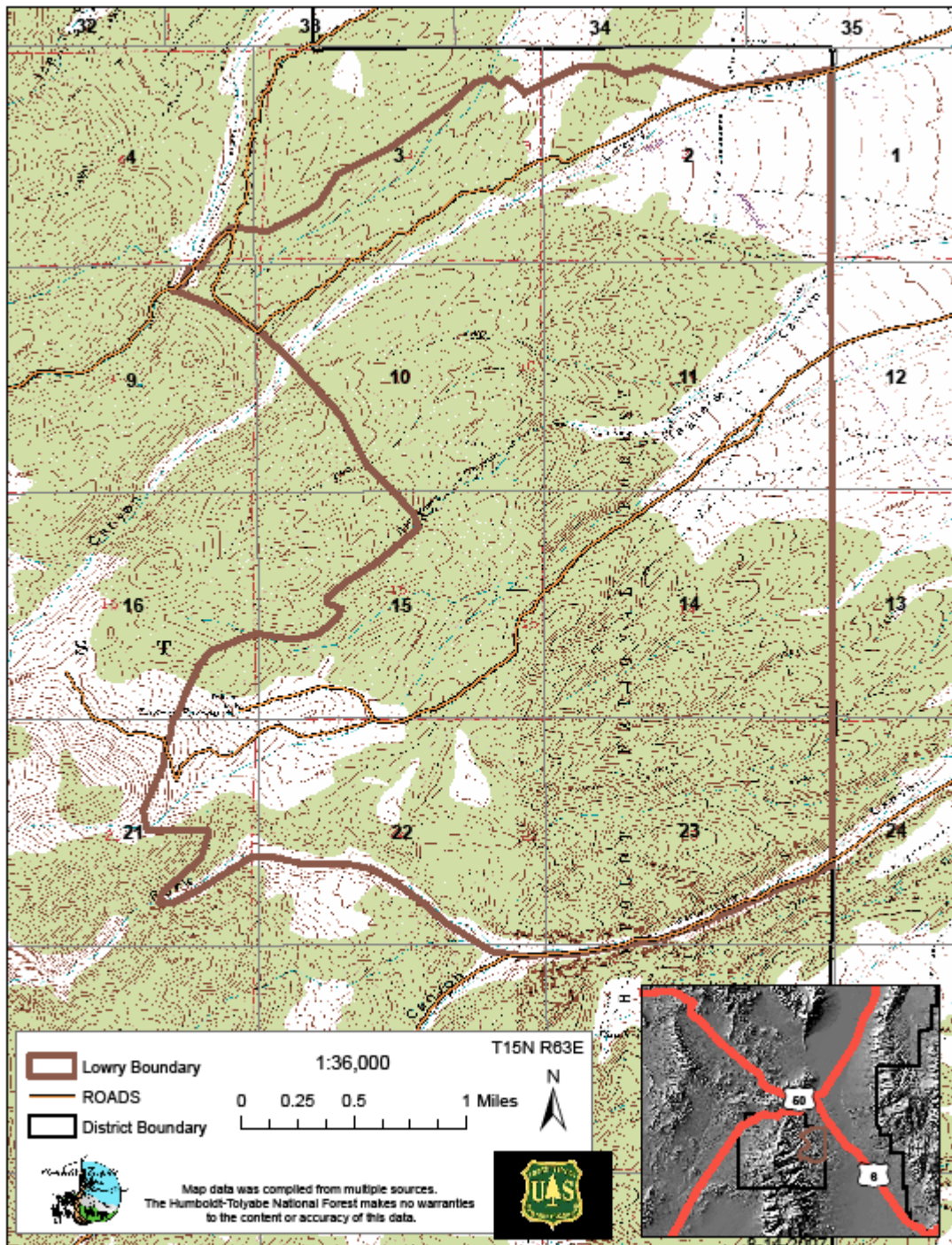
This project would be authorized under the Healthy Forest Restoration Act of 2003. The purpose of the Act is to reduce wildfire risk to communities, municipal water supplies and other at-risk public land through a collaborative process of planning, prioritizing and implementing hazardous fuel reduction projects. The Act is also intended enhance efforts to protect watersheds and address threats to forest and rangeland health, including catastrophic wildfires, across the landscape and to protect, restore and enhance forest ecosystem components, promoting the recovery of species to improve biological diversity and enhance productivity and carbon sequestration.

The project area is located on the Ely Ranger District and is adjacent to the at-risk community of Ely, Nevada. This project is supported by the White Pine County Fire Plan – a Nevada Community Wildfire Risk Assessment Project (Nevada Fire Safe Council, 2005). The plan identified the area south-southwest of Ely as having an extreme fuel hazard condition. The Lowry project is located directly south of Ely. The plan noted that:

The worst-case scenario for Ely would be a fire starting south or southwest of the community. If driven by strong gusting winds, the fire would travel through the pinyon-juniper vegetation on the west side of town, resulting in a catastrophic crown fire. Such a fire could have sufficient flame lengths to spot across Highway 6 and continue to spread into the south side of Ely.

The following map includes the vicinity of the project area.

Lowry Hazardous Fuels Reduction



Purpose and Need for Action

The purpose of this proposal is to reduce potential wildfire severity and overall wildfire risk to private residences and property and to increase public and firefighter safety by creating defensible space within the Lowry Wildland Urban Interface. This need for action is based on the increased pinyon and juniper density and associated fuel loadings and fire risk that have resulted in an increased risk of wildfire impacts to urban interface areas and long-term ecosystem integrity. High fuel loadings also created hazardous conditions for firefighters attempting to control and/or suppress wildfires. There is a need to provide defensible areas for firefighters to operate in. This project is needed to provide added fire protection to private properties in the Lowry urban interface area and increase the resiliency of key ecosystem components on adjacent National Forest system lands.

High pinyon-juniper fuel loadings have created a moderate-high risk of losing key ecosystem components, such as native understory plants, from high severity fires. Restoration of these ecosystem components is also needed because pinyon-juniper expansion has increased vegetative competition for light, water and nutrients. As a result, coverage by shrubs and herbaceous species has declined, reducing critical habitat components for many wildlife species, including mule deer and sage grouse.

This action responds to the goals and objectives outlined in the Humboldt National Forest Land and Resource Management Plan, and helps move the project area towards desired conditions. Forest-wide goals applicable to this project are:

Goal #10 Identify, protect, interpret, and manage significant cultural resources.

Goal #14 Improve the current productive level of wildlife habitat with emphasis on maintaining or improving limiting factors such as big game winter ranges measured in acres in cooperation with Nevada Department of Wildlife.

Goal #21 Maintain sensitive plant species

Goal #24 Emphasize the control of priority 1 noxious weeds

Goal #29 Provide water and soil resource input to other resource activities to protect or improve water quality and soil productivity

Goal #52 Establish and maintain fuel mosaics which result in an acceptable hazard and spread potential of wildfire, allow an appropriate wildfire suppression and contribute to other resource programs and aesthetics.

Forest Plan direction and standards and guidelines applicable to this project are shown below:

- Prescribed burning will comply with state air quality standards.
- Fuel reduction program will be directed towards high risk fire areas and high valued facilities.
- Livestock grazing will not be allowed for two years following treatments, and/or seedings.

Proposed Action

The Forest Service proposes to reduce pinyon and juniper expansion and associated fuel loads from Lowry Canyon to Sawmill Canyon on the east side of Ward Mountain. This proposed action includes two treatment types – mechanical treatment and prescribed fire.

The proposed area for prescribed burning and mechanical treatment is named after the Lowry Springs which is in this project area. This project area is in the Ely Ranger District of the Humboldt-Toiyabe National Forest and is in east-central Nevada. The townships and ranges for this area are T15N, R63E sections 2-4, 9-11, 14-16, 21-23, 26, and 27. The project size is approximately 4,500 acres. The project area ranges in elevation from 6,900 to 8,400 feet.

The proposed action for treating the designated project area is to use mechanical and prescribed fire to reduce over story vegetation (primarily tree species). Approximately 3,253 acres are proposed for mechanical treatment, approximately 844 acres proposed for a primarily prescribed fire treatment. On slopes less than 30%, mechanical means will be used to cut the trees. This treatment may be followed with prescribed fire. On slopes greater than 30% prescribed fire will be used to reduce pinyon-juniper density. Burned areas may range from 5 to 200 acres, with some occasionally larger, in a mosaic pattern. The type of fire behavior needed to kill the pinyon-juniper is high intensity, low severity. A variety of ignition methods may be used, including aerial ignition.

Decision Framework

Given the purpose and need, the deciding official reviews the proposed action and environmental analysis in order to make the following decisions:

- 1) Whether to approve the proposed Lowry Hazardous Fuels Project as written or with modifications.
- 2) Whether or not the project has the potential for significant impact and if an environmental impact statement would need to be prepared prior to issuance of any decision.

Public Involvement

This project was listed in the Humboldt-Toiyabe National Forest Schedule of Proposed Actions beginning with the July 2006 edition and continuing through the April 2009 edition. The proposal was provided to the public and other agencies for comment during scoping in May 2006. In August, 2007 a Notice of Proposed Action was mailed to interested parties for a 30-day public comment period. The Notice of Proposed Action was published in the Ely Times on May, 16th, 2007.

Following project modifications, a public meeting was held in Ely on September 9, 2008. An additional public scoping period was held after the public meeting in September, 2008.

Eight comment letters, phone calls and oral comments were submitted. The vast majority of these were in support of the project. A number of supporters urged caution in the prescribed burning portion of the project area. These comments are reflected in the

emphasis that the proposed action places on burning only under safe weather conditions. One commenter opposed the project for a wide variety of reasons, many related to concerns about livestock grazing. Using the comments from the public, other agencies, and the Yomba, Duckwater, and Ely Shoshone tribes, the Forest Service developed a list of issues to address.

Issues

Based on public comment and consultation and interdisciplinary analysis these issues were identified to be addressed for this project:

- Effects on wildfire risk to ecosystems and communities in the Lowry area.
- Changes to vegetative communities, including effects on rare plant habitats.
- Short and long term impacts and benefits to wildlife habitat.
- Impacts to watershed conditions.
- Impacts to permitted livestock grazing.
- Potential for spread of noxious weeds.
- Potential for effects on heritage resources.

Other issues considered for this project included:

Proliferation of roads and trails for motorized recreation. This was not carried forward for detailed analysis because it's outside the scope of the project. Road and trail management was fully addressed in the Ely Travel Management decision of 2009.

Loss of areas for American Indian pine nut collection. This was not carried forward for detailed analysis because the proposed action excludes fire ignition in areas used for pine nut collection by American Indians. On-going consultation with tribes will occur throughout the planning and implementation of this project to ensure tribal concerns are addressed.

Impacts to Wilderness/Roadless. This was not carried forward for detailed analysis because the project area does not include any wilderness or roadless areas.

Impacts to wild horses. This was not carried forward for detailed analysis because the project area does not include any Wild Horse Management Areas.

ALTERNATIVES

No Action

Under the No Action alternative, current management plans would continue to guide management of the project area. No fuels treatments would be implemented to accomplish project goals.

Proposed Action

The proposed action for treating the designated project area is to use mechanical and prescribed fire to reduce over story vegetation (primarily tree species). Approximately

3,253 acres are proposed for mechanical treatment, and approximately 844 acres proposed for a primarily prescribed fire treatment. On slopes less than 30%, mechanical means will be used to cut the trees. This treatment may be followed with prescribed fire. On slopes greater than 30% prescribed fire will be used to reduce pinyon-juniper density. Burned areas may range from 5 to 200 acres, with some occasionally larger, in a mosaic pattern. The type of fire behavior needed to kill the pinyon-juniper is high intensity, low severity. A variety of ignition methods may be used, including aerial ignition.

Mechanical Treatment

The mechanical treatments would be emphasized on slopes less than 30%, along the roads edges, and in the black sagebrush communities where pinyon and junipers are expanding. Post treatment spacing would be 30 – 60 feet between trees to reduce the threat of wildfire and encourage the growth of key understory ecosystem components.

The mechanical treatment area includes 3,253 acres. Trees will be completely removed by low impact machinery, or masticated in place. If removed, trees will be cut at their base and then placed onto an attached trailer or separate vehicle for removal. Existing roads will be used whenever possible. However, because of the limited road system, the machinery will also travel cross country.

In urban interface areas tree spacing would be greater in order to further reduce wildfire risks. Potential equipment that may be used would be chainsaws, three wheeled shears, tracked vehicles, rubber tire skidders and a portable chipper. Only low-soil-impact equipment would be used. The work would be accomplished by using contractors. Follow – up understory prescribed burning would only be used where safe and appropriate.

Prescribed fire

The proposed action for treating the prescribed burn areas is to use prescribed fire only under safe conditions to reduce pinyon and juniper overstory vegetation. This treatment would be used primarily on areas with slopes greater than 30 percent.

The prescribed burn area is 844 acres. Burning will follow the prescription that is in the burn plan. Hand and/or aerial devices will be used to ignite this fire. Ground support staging areas will be on existing roads. Hand lines will only be constructed in areas to prevent damage to historic properties or to contain fire movement. In addition, firefighting resources, including engines, would be present to ensure full containment of the prescribed fire within the project area. The project will take one week implement.

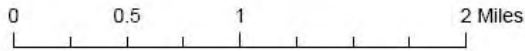
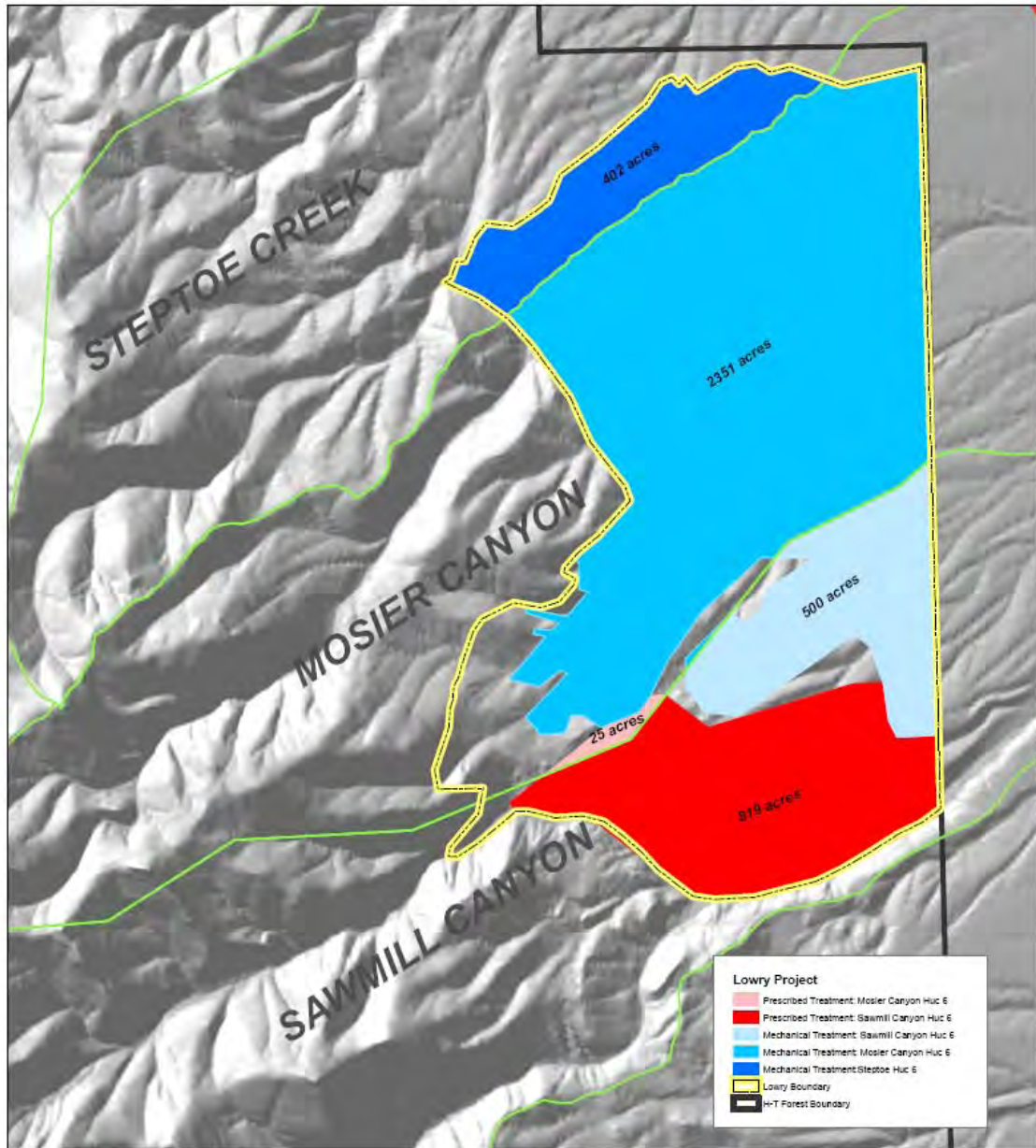
The treatments within the project area may vary due to topography, (slope, aspect), and vegetation types. The target areas for the prescribed burn would be the bottoms of the drainages and Phase I and II pinyon/juniper stands. The Phase I and II pinyon/juniper stands have an understory of vegetation that has a very good chance of recovering from fire or other treatments. Many of the steep south-facing slopes have lost the understory vegetation and will not be treated. The types of equipment that will be used for the prescribed fire are helitorch and drip torches, and slopes with adequate vegetation in the understory. Most south slopes will not be treated due to the lack of understory vegetation.

Prescribed burns would be in a mosaic pattern in which openings average 5-200 acres. Unburned areas would be used to maintain a seed source and provide habitat for wildlife. A few openings would be greater than 200 acres where determined safe and needed to reduce wildfire risks.

During prescribed fire implementation, firefighting resources, including engines, would be present to ensure full containment of the prescribed fire within the project area. Roads within the project area would be closed to the public for the brief time that operations are in progress. Proper signs would be posted as would a notification through proper media (e.g., television, radio, and newspapers). Local residents would be notified. The project area would also be checked and cleared of any campers, hunters, and any other recreational users. These actions would ensure the safety of both the public and project personnel.

The following map displays the proposed action treatment areas by subwatershed.

Lowry: Treatment Units Per HUC 6



1:40,000



02-06-2009



Map data was compiled from multiple sources. The Humboldt-Toiyabe National Forest makes no warranties to the content or accuracy of this data.

Design Features

Design features have been developed to ensure the project maximizes the benefits and minimizes the risks to resources in the project area.

Resource Protection

Exclude a 250 acre territory around a goshawk nest that was found during project inventories. Establish an aircraft buffer in the vicinity if any spring burns are implemented.

Avoid burning the historic wood features within the project area. Hand clearing of vegetation around these features may be done as needed to protect the site.

Avoid active ignition of other known cultural sites.

During implementation, wash all vehicles entering the project area within a designated staging area to avoid transmission of invasive and/or noxious weed seeds.

In identified areas of high risk, disturbed ground in burned areas within or near weed populations may be seeded with an approved seed mix following project implementation.

As needed, control of noxious weeds and invasive species would be done under the Forest's approved treatment program.

No ignition will occur on rocky outcrops to avoid burning pre-settlement trees and rare plant communities

Avoid igniting or cutting identifiable pre-settlement trees. These trees are identifiable on the landscape by their, flattened, rounded and/or asymmetrical crowns which stand well above the surrounding younger trees that are shorter with conical crowns that may display a pointed tip (stronger apical dominance).

No igniting in the mountain mahogany stands identified on the Humboldt-Toiyabe current vegetation map; avoid burning these stands which provide wildlife habitat.

Seeding of native grasses and forbs may be done following treatment to provide additional seed sources for vegetative recovery.

Prescribed fire should not be used in potential or occupied habitat of pygmy rabbits. Trees in these areas should be removed with chainsaws and be accessed by foot.

Use mechanical treatments for pinyon/juniper expansion in black sagebrush and basin big sagebrush.

Leave and maintain large, cone-bearing pinyon trees in patches within the treatment area for the pinyon jay, black-throated gray warbler, and the juniper titmouse. Large expansive stands of pinyon occur adjacent to the project area.

Maintain open, mature pinyon-juniper woodlands with shrubby understory on moderate, rocky slopes and canyon mouths.

Ensure any prescribed burning is brief in duration (less than 2 weeks) to allow for migratory birds that may lose their nest to re-nest.

If the mechanical treatments are implemented during the breeding season (May 1 to July 15), nesting bird surveys will be done and breeding territories found will be flagged and avoided.

Grazing of treated areas would be prohibited for minimum of two years.

Slash piles will be kept at least 30 feet from drainages.

Skidding or other activities that would tend to loosen the soils should be kept away from areas of steep slopes. Skidding across drainages will be avoided where feasible.

Public Safety

Roads within the project area would be closed to the public for the brief time that operations are in progress.

Signs would be posted, as would a notification through public media.

Local residents and permittees would be notified by personal contact.

The project area would also be checked and cleared of any campers, hunters, and any other recreational users.

Monitoring

Monitoring is proposed to 1) assess the effectiveness of treatments in achieving objectives; 2) identify unintended impacts to resources; and 3) determine success in achieving desired vegetation re-establishment.

The following monitoring is dependent upon the availability of future Forest Service funding.

Vegetation - Monitoring would measure post vegetative response to treatments.

Cultural Resources - Conduct a post burn assessment on burned sites to determine the effects of the burn..

Noxious Weeds and Invasive Species - Pre and post monitoring of treatments would be done as part of the Forest's ongoing weed management program.

Maintenance of Treated Areas

The proposed action includes maintaining treated areas over time. Utilize burning and mechanical treatments as maintenance treatments. Maintenance treatments will be scheduled into the annual program of work. The maintenance workload will be fully considered when assessing the ability to implement this proposed action.

Alternatives considered but eliminated from detailed consideration

The following alternatives were proposed by interested publics during the notice and comment period for this project.

Reduction in Livestock Grazing Alternative

This alternative would close the livestock grazing allotment or significantly reduce the permitted number of livestock on the allotment. This alternative fails to reduce fuel loads or reduce the risk for wildfires. This alternative does not address the purpose and need and therefore was eliminated from further consideration.

Selective Thinning Alternative

Under this alternative selective cutting of only younger aged-class marked trees would be done in the treatment area. Falling and leaving the trees on site without further fuels reduction treatment would increase the short term fuel loadings. Needles dry out and remain on the trees for about 2 years. Fine branches would remain on the trees for at least 5 to 10 years. The rate of spread of an unplanned ignition would be increased by the presence of these fine fuels in the short term. The larger residual fuels (tree trunks and larger branches lying on the ground) generated by falling and leaving trees over the entire project area would potentially increase fire severity and intensity in the event of an unplanned ignition. Falling and leaving trees on site without further fuels reduction treatment over the 4,500 acre project area would result in an immediate increase in down fuels and corresponding risk of severe wildfire, and does not meet the purpose and need for action. Therefore this alternative was eliminated from further consideration.

Experimental Techniques and Chemicals Alternative

This alternative would limit experimentation with new techniques and chemicals to areas infested by cheatgrass and crested wheat seedings. This alternative is outside the scope of this analysis and does not address the purpose and need. This alternative was eliminated from further consideration.

Natural Fires Alternative

This alternative would allow natural fires to burn while decreasing or eliminating domestic livestock grazing. This alternative would not reduce the wildfire risk within the urban interface and does not address the purpose and need. Therefore, this alternative was eliminated from further consideration.

Development and Private Land Alternative

This alternative would limit treatments to no more than 1/8 mile from any development and requires treatment on private lands. Although this alternative would meet a portion of the purpose and need, it would not address issues with restoration of vegetation ecosystems away from developments and private lands. Additionally, the agency cannot mandate treatments on private lands under this proposal. This alternative does not fully address the purpose and need and therefore was eliminated from further consideration.

Environmental Consequences

Analysis Qualification

This section provides a summary of the key environmental effects. It summarizes the information in Resource Reports, which disclose the full analysis of the direct, indirect, and cumulative effects. They are incorporated by reference and are available in the project file located in the Ely Ranger District office.

The consequences of implementing the proposed action are summarized in terms of changes in the affected environment from the current situation. This project would not have any effect on existing wilderness areas, inventoried roadless areas, or research natural areas.

Each resource area discloses the direct, indirect and cumulative effects. Direct and indirect effects are caused by the action and either occur at the same time and place or are later in time or farther removed in distance, but are still reasonably foreseeable. Cumulative impacts result from the incremental impact of the action, when added to other past, present and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions.

The cumulative effects analysis does not attempt to quantify the effects of past human actions by adding up all prior actions on an action-by-action basis. There are several reasons for not taking this approach. First, a catalog and analysis of all past actions would be impractical to compile and unduly costly to obtain. Current conditions have been impacted by innumerable actions over the last century (and beyond), and trying to isolate the individual actions that continue to have residual impacts would be nearly impossible. Second, providing the details of past actions on an individual basis would not be useful to predict the cumulative effects of the proposed action or alternatives. In fact, focusing on individual actions would be less accurate than looking at existing conditions, because there is limited information on the environmental impacts of individual past actions, and one can not reasonably identify each and every action over the last century that has contributed to current conditions. Additionally, focusing on the impacts of past human actions risks ignoring the important residual effects of past natural events, which may contribute to cumulative effects just as much as human actions. By looking at current conditions, we are sure to capture all the residual effects of past human actions and natural events, regardless of which particular action or event contributed those effects.

Current and reasonably foreseeable future actions include other prescribed fire, vegetation treatments in the area, including those on lands managed by the Bureau of Land Management (BLM), livestock grazing, recreation, and fuelwood gathering.

The following analysis does not address impacts to lands with unique characteristics including parklands, prime farmlands, wetlands, wild or scenic rivers or ecologically critical areas because they are not present within the analysis area.

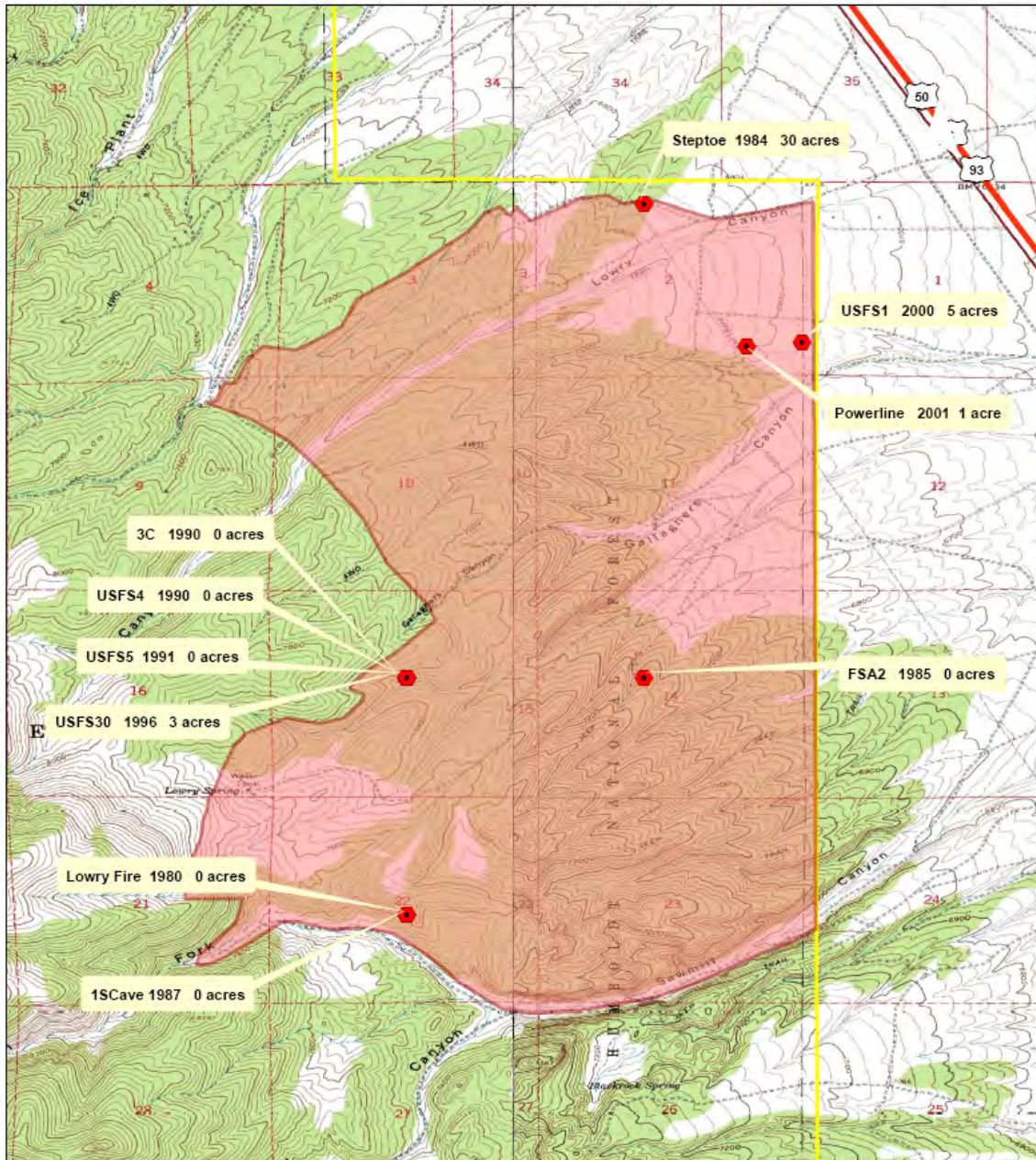
Vegetation, Fire/Fuels

Affected Environment

Background

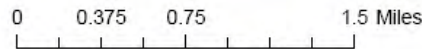
This project is being conducted under the Healthy Forest Restoration Act within the wildland urban interface of and at-risk community. An at-risk community is defined as an interface community defined in the notice titled “Wildland Urban Interface Communities Within the Vicinity of Federal lands That Are at High Risk From Wildfire” (66 Fed. Reg. 753 January 4, 2001). These are areas in which conditions are conducive to a large-scale wildland fire disturbance event and for which there is a threat to human life or property. Ely, Nevada was identified in that notice. The project area is within the interface of the Ely area. The current high risk of wildfire compromises public safety and creates safety challenges for firefighters should a wildfire occur. The high potential for wildfire is illustrated in the following figure, which shows the location of ten recent fire starts in the Lowry area. With increased fuel loading it is only a matter of time before a fire start spreads throughout the area, threatening homes and endangering firefighters.

Lowry Fire History



Project Area

- Fire History 1980-2004
- Lowry Boundary
- H-T Forest Boundary



01-15-2009



Map data was compiled from multiple sources. The Humboldt-Toiyabe National Forest makes no warranties to the content or accuracy of this data.

The majority of the project area consists mainly of pinyon pine and Utah juniper cover types. Mountain big sage, basin big sage, and mountain mahogany cover types are also present. Miller *et. al.* 2008, define the early, mid, and late Phases of pinyon-juniper woodland successional development as: Phase I) trees are present but shrubs and herbs are the dominant vegetation that influence ecological processes on the site, Phase II) trees are co-dominant with shrubs and herbs and all three vegetation layers influencing ecological processes on the site, and Phase III) trees are the dominant vegetation and the primary plant layer influencing ecological processes on the site.

The project area consists mostly of Phase II pinyon-juniper and some Phase I and III pinyon-juniper (see table 3). As pinyon juniper successional development transitions into Phase III, the understory shrubs (e.g. sagebrush), grasses and forbs are lost and canopy cover of these tree species closes. The loss of the ground vegetation and increased density of canopy fuels marks a shift in biomass to crown fuels, which will significantly affect fire behavior. The more tree dominated the woodlands become, the less likely they are to burn under moderate conditions. In addition, Phase III pinyon-juniper has lost much of the seed sources necessary to regenerate understory herbs, grasses, and shrubs (Miller *et. al.* 2008).

Historic sagebrush communities have decreased due to post settlement pinyon-juniper expansion. Prior to 1860, two thirds of the Great Basin landscape was treeless and occupied by sagebrush steppe communities. Today, less than one third of the landscape remains treeless. Without disturbance, these woodlands are projected to continue to develop into Phase III woodlands in the next 40 to 50 years. As the woodlands develop into Phase III, understory communities will be lost to competition. This loss of understory vegetation and accompanying tree dominance represents a loss of vegetation heterogeneity and a decline in structural diversity, understory species, and herbaceous production. Additionally, as pinyon-juniper woodlands within the landscape shift towards Phase III, the potential for large-scale intensive wildfires increases. Since Phase III woodland represent a loss of understory, these areas will be less likely to recover with a suite of native grasses, herbs, and shrubs and are more likely to be invaded by noxious and invasive weeds. In effect, the landscape transition to Phase III represents a loss of landscape resiliency, and the ability to recover from disturbances (Miller *et. al.* 2008).

One of the factors attributed to the expansion of pinyon-juniper woodlands across the Great Basin is the reduced role of fire on the landscape. Fire suppression activities, cessation of Native American burning and removal of fine fuels by livestock grazing have lengthened the fire return interval in the sagebrush communities (Miller, Tausch, 2001).

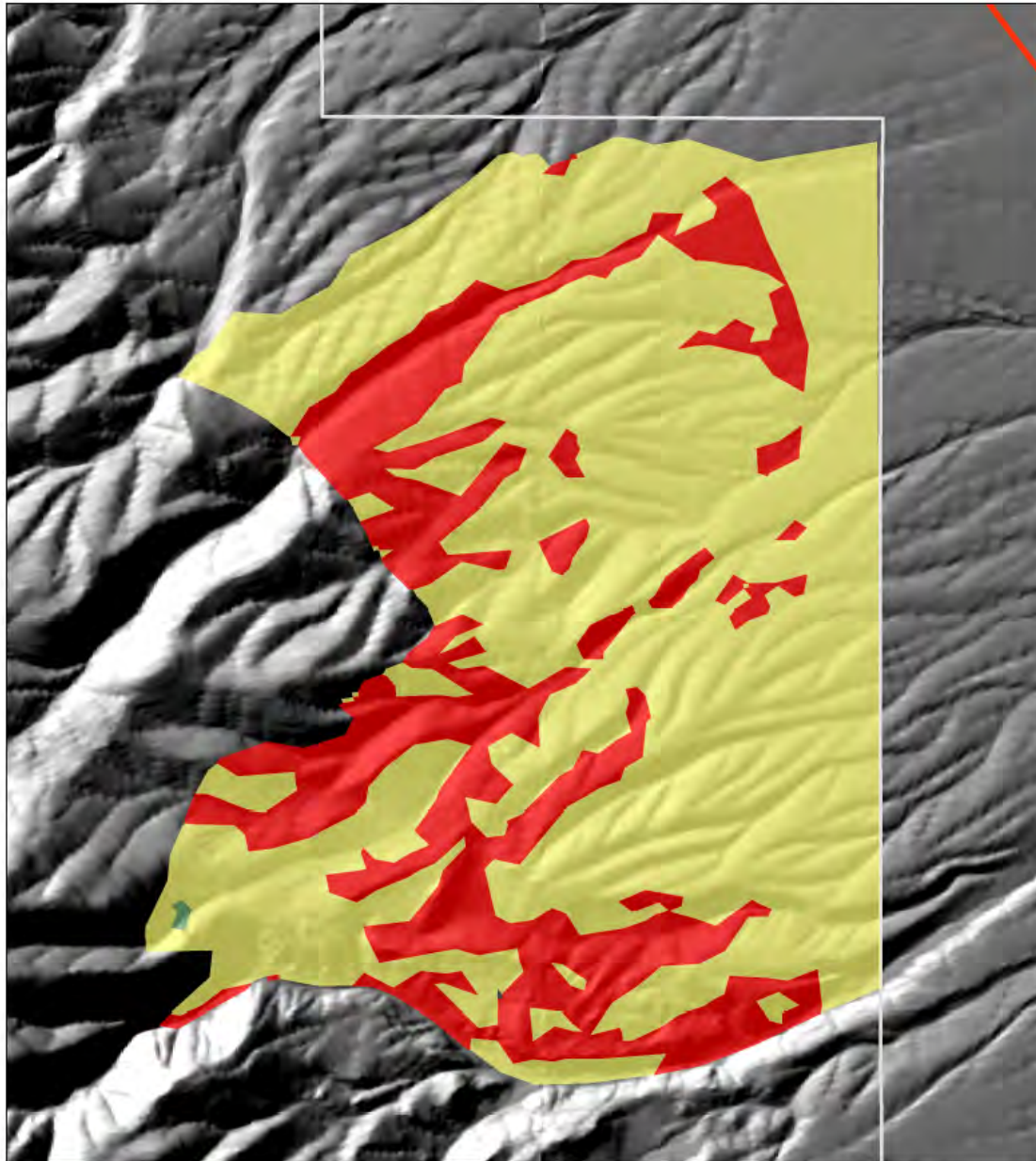
Historical fire regimes for biophysical settings in the project area are displayed in the table below. Biophysical settings describe vegetation that would be found in a given area when historic disturbance regimes, i.e. fire, are allowed to function. As is mentioned above, prior to 1860 most of the Great Basin landscape was treeless and occupied by sagebrush communities. Historic pinyon-juniper woodlands were found on fire safe sites, often rocky ridges and outcrops with little vegetation available to carry a fire. The Lowry project area is no different, much of the pinyon covered landscape found in the Lowry project was historically occupied by sagebrush communities.

Landfire fire regimes and return intervals for the Lowry area		
Biophysical setting	Dominant species	Fire regime*
Great Basin Pinyon-Juniper Woodland – Historical pinyon juniper woodlands	single needle pinyon, and/or Utah juniper	III
Inter-mountain Basins Curl-leaf Mountain Mahogany Woodland and Shrubland	mountain mahogany	III
Inter-mountain Basins Big Sagebrush Steppe	mountain big sagebrush.	IV
Inter-mountain Basins Big Sagebrush Shrubland	Wyoming sagebrush basin big sagebrush	IV
*Fire Regime Groups are: I: 0-35 year frequency, surface severity; II: 0-35 year frequency, replacement severity; III: 35-100+ year frequency, mixed severity; IV: 35-100+ year frequency, replacement severity; V: 200+ year frequency, stand replacement severity.		

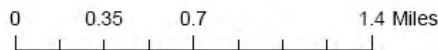
The fire history map displays fire occurrence from 1980-2004 within the project area. There have been 10 fires that range for ¼ acre in size to 30 acres. There have been a couple of fires ¼ acre or less from 2004-2008 that are not on the fire history layer. This demonstrates that fire occurs within the project area.

Fire Regime Condition Class (FRCC) is a system used to classify the amount of departure from the natural regime (Hann and Bunnell, 2001). FRCC considers ecological factors that alter these cycles to measure departure from natural conditions for a particular landscape which include 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. insect and diseased mortality, grazing, and drought). For the Lowry project area, about 3,000 acres are in FRCC 2, with a moderate departure from historic regimes and a moderate risk to ecosystem integrity. Another 1,000 acres are in FRCC 3, with a high departure from historic regimes and a high risk to ecosystem integrity. Only three acres are in FRCC 1 with a low departure from historic regimes and a low risk to ecosystem integrity. The following map displays FRCC for the Lowry area.

Lowry Fuels Project: FRCC



- Project Area**
- Fire Regime Condition Class I
 - Fire Regime Condition Class II
 - Fire Regime Condition Class III
 - Bare Rock/Sand Clay
 - H-T Forest Boundary



01-15-2009



Map data was compiled from multiple sources. The Humboldt-Toiyabe National Forest makes no warranties to the content or accuracy of this data.

Nearly all of the Lowry area is in Fire Regime Condition Classes II and III, indicating a departure from historic fire regime conditions and an increased risk of an uncharacteristically severe wildfire.

Fire/Fuels and Climate Change

Fire suppression; past grazing practices, harvest of pinyon-juniper for charcoal making, and climate change all have combined to alter historic regimes. In the Great Basin landscape a most evident indicator of this is the expansion of pinyon-juniper.

Research has documented strong links between past climate variability and area burned in wildfires. Projections from climate models suggest that burned areas and fire severity will increase in the future over much of the United States, including the Great Basin. These changes will affect fire suppression costs and resources, alter ecosystem characteristics, and increase potential fire risk to communities such as Ely.

As fires burn more frequently, burn larger areas, or burn more severely, the carbon stored in ecosystems will decrease, and carbon gases and particulates in the atmosphere will increase. These increases will add to air pollution and have the potential to increase the intensity of greenhouse warming. The net impact of fires on global warming potential, however, is not fully understood (USDA, Forest Research and Development, 2007).

Vegetation Composition

About 88% of the project area is currently dominated by pinyon and juniper. Miller et al 2008, indicates that much of the tree dominated landscape in the Great Basin was formerly not occupied by pinyon-juniper, it was dominated by sagebrush steppe communities. Pinyon, juniper, and pinyon-juniper vegetation cover types were combined in this analysis. Sage brush types were also combined.

Pinyon-Juniper Woodlands

Within the Great Basin, pinyon-juniper has expanded its range greatly since settlement, primarily in the last 100 years (Barney and Frischknecht 1974). It has been suggested by many researchers/managers that one of the causes of the pinyon-juniper expansion is the exclusion of fire. The expansion has been primarily into the shrub-grass community types located in lower elevations; however, high elevation shrub-grass communities have also been affected by the expansion. If unmanaged, trees become dominant and eventually crowd out herbaceous and shrub species (Barney and Frischknecht 1974). Specifically, increasing densities of pinyon-juniper will reduce light, water, and nutrient availability, which causes the decline in understory shrub and herbaceous vegetation (Naillon *et al.* 1999, Miller *et al.* 2000, Chambers *et al.* 2004, Johnson 2005). The Lowry fuels reduction project is located on portions of an alluvial fan, these gentle slopes at the foot of a mountain are typical of the historical grass-shrub community types mentioned above and are currently occupied with pinyon.

Lowry project area vegetation composition		
Vegetation cover types	Acres	Percent
Pinyon-juniper woodland	3,968	88%
sagebrush	460	10%
curl-leaf mountain mahogany	61	1%
other vegetation	5	0.1%

Pinyon-juniper woodlands are the dominant cover type within the project area, mostly Phase II; with a smaller portion in Phase I and III. Phase II is characterized by active expansion of pinyon-juniper, moderate to high seed production, active tree recruitment, and a nearly

Lowry Are Pinyon Juniper Woodland Phases		
Phase	Acres	Percent
Phase I	984	25%
Phase II	2,796	70%
Phase III	188	5%

intact understory layer (Miller *et. al.* 2007, Miller *et. al.* 2000). Phase III is characterized by reduced expansion of pinyon-juniper, low to moderate seed production, limited tree recruitment, and a dead/thinning understory (Miller *et. al.* 2007, Miller *et. al.* 2000).

The dominance of pinyon-juniper within the project area has decreased the heterogeneity of the vegetation structure and composition. Currently, pinyon-juniper expansion is reducing and will continue to reduce the productivity, abundance, and diversity of understory shrub and herbaceous species. As the pinyon-juniper becomes more dominant within the project area the potential for low intensity fires is reduced, which increases the fire hazard.

Older pre-settlement pinyon and juniper are identifiable on the landscape by their flattened, rounded and/or asymmetrical crowns which stand well above the surrounding younger trees that are shorter with conical crowns that may display a pointed tip (stronger apical dominance). In addition, pre-settlement pinyon-juniper is often found on steep rocky fire safe sites (Miller *et. al.* 2007).

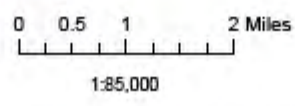
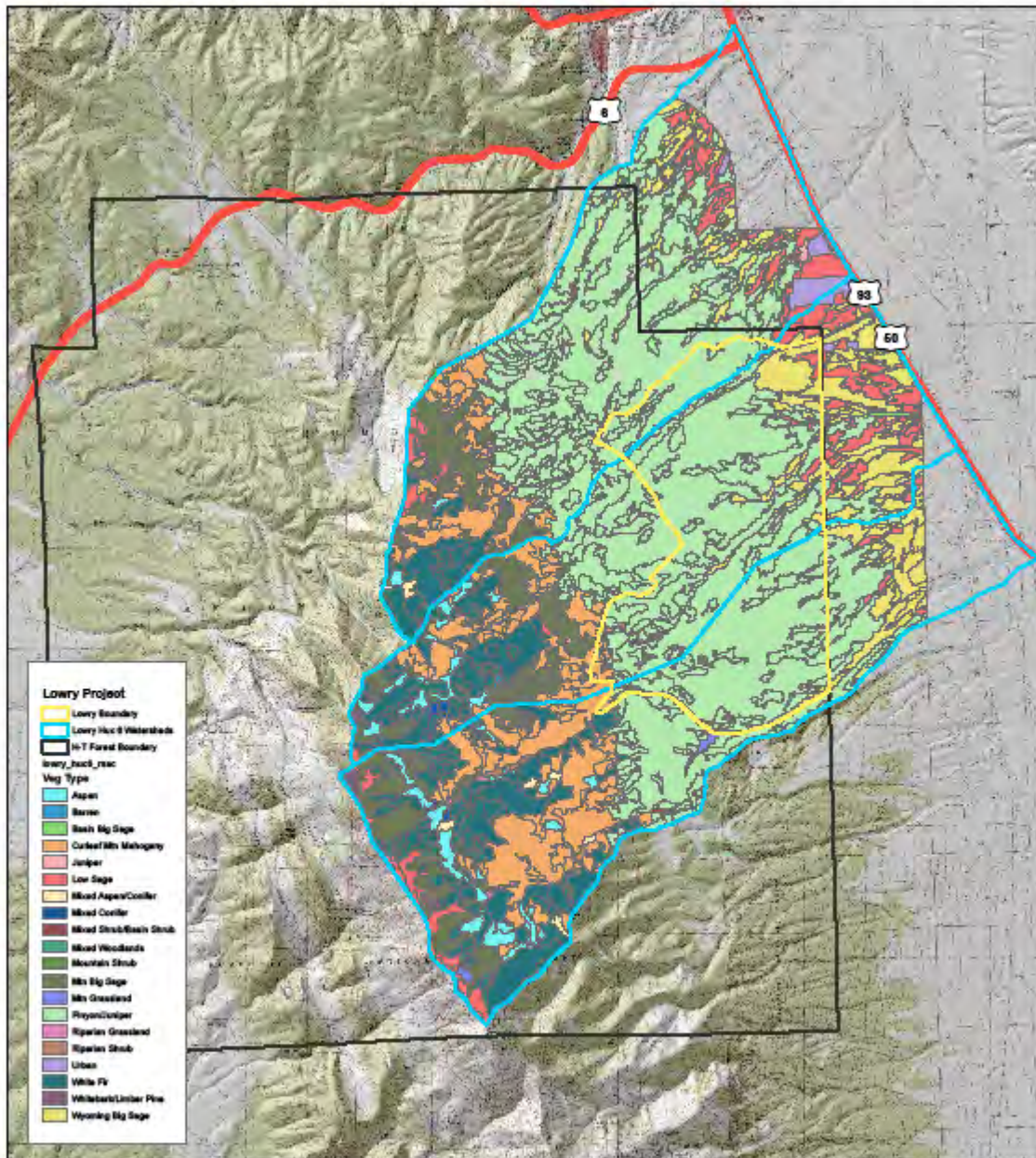
There are no commercial pine nut or fuelwood harvest units within the project area. A minor amount of personal use fuelwood harvesting occurs within and adjacent to the project area, of the 636 cords of personal use fuelwood sold on the Ely Ranger District in fiscal year 2008, 65 were sold in the Lowry area. Pine nut gathering is limited; the area is not a productive nut producer.

Sagebrush and Mountain Mahogany

The second most dominant cover type is mountain big sagebrush occupying approximately 10% of the project area. Woodland expansion within the project area has diminished the mountain big sage cover type to 10% and will continue to fragment this cover type over time.

Mountain mahogany exists in a small portion of the project area in the upper elevations, on the southwest corner. This species occurs throughout the intermountain west in shrub ecotones/brush communities, in open forests, on ridgelines, and on rock outcrops (Marshall 1995). Curlleaf mountain mahogany can depend on fire or other disturbances to reduce conifer competition and produce favorable soil conditions for seedling establishment (Marshall 1995). The following map displays vegetation composition in the project area.

Lowry: HUC 6 Watershed Boundary & RSAC



Map data was compiled from multiple sources. The Humboldt-Toiyabe National Forest makes no warranties to the content or accuracy of this data.

Environmental Consequences

No Action Alternative

If no action is taken to reduce hazardous fuels in the area, threats to public health and safety would increase over time as the risk of a major wildfire increases and the ability of firefighters to safely battle the blaze decreases.

Fire/Fuels and Climate Change

The no action alternative would result in an increased risk of uncharacteristically severe wildfire. There would be a minor increase in factors contributing to climate change from the Lowry area from increased greenhouse gas emissions from these acres because the risk of acres being burned by uncharacteristically severe wildfires would be increased.

Pinyon-Juniper Woodlands

If the no action alternative is chosen, pinyon-juniper would continue to expand, leading to increased fuel loading and decreased understory productivity, diversity and resiliency. The effects from fire would be high severity, stand replacement type wildfire.

Sagebrush and Mountain Mahogany

If the no action alternative is chosen, there would be continued expansion of pinyon-juniper into the sagebrush type, the sage would be lose vigor and eventually die as the expansion progresses into Phase III. The effects from fire would be high severity, stand replacement fire which in turn has the potential to do a type conversion on vegetation.

If the no action alternative is chosen, this alternative would increase the chance of a stand replacement fire. Mountain mahogany has very little tolerance to fire. Post fire establishment can take several decades following severe fires.

Proposed Action

Since the proposed action would substantially reduce fuel loading the risk of wildfire would decrease, enhancing public and firefighter safety.

Fire/Fuels and Climate Change

The proposed action would directly release CO₂ during the burning operation, which contributes to increasing the atmospheric greenhouse gas concentration. However, prescribed burn that burns only 500 acres will reduce few emissions than a potential wildfire of greater size. This would result in a minor reduction in factors contributing to climate change from the Lowry area from decreased greenhouse gas emissions from these acres because the risk of acres being burned by uncharacteristically severe wildfires would be reduced.

Pinyon-Juniper Woodlands

Pinyon-juniper trees will be thinned to a spacing of approximately 30 to 60 feet, leaving approximately 12 to 48 trees per acre. Because there will be residual pinyon and juniper remaining, these species will reestablish themselves more rapidly than if the area were more heavily thinned or clear-cut. Reducing the density of trees through thinning will

increase moisture availability to the residual trees. Prescribed burning will occur on approximately 850 acres, the result will be overstory mortality of pinyon-juniper and some understory mortality. It is more difficult to predict the residual trees per acres that will remain after a prescribed burn, but the number of trees per acre most likely will be reduced substantially, setting back pinyon-juniper expansion, but not halting it.

Increased sunlight and moisture will be available to the understory and the understory shrubs, grasses and forbs will increase. Since the majority of the project area is in pinyon-juniper Phases I and II, understory vegetation is intact and would be able to respond to favorable growing conditions from increased light and moisture created by the decrease in overstory pinyon-juniper. The following photo illustrates the difference between treated and untreated areas on BLM managed lands adjacent to the project area.

Vegetative diversity would increase as pinyon-juniper expansion is decreased over time within the project area. The age class and structural diversity will improve, creating a varied vegetation mosaic which will, over time, increase resiliency within the project area.

The project would reduce pinyon-juniper fuel loading within the project area by reducing canopy fuels. The proposal would break up the pinyon-juniper crown canopy and decrease fuel continuity. This would lower the possibility of large-scale wildfires and reduce potential wildfire severity, aiding fire suppression efforts in the future.

Pre-settlement pinyon and juniper trees would not be targeted for

mechanical treatment and would benefit from the decreased potential for wildfire because fuel loading and ladder fuels would be reduced by removal of adjacent younger pinyon-juniper. Prescribed fire could scorch or kill pre-settlement pinyon and juniper trees only if the fire carries into the immediate area where the trees are located. In the long term, these trees would benefit from reduced vulnerability to wildfires due to the reduced fuel loading.

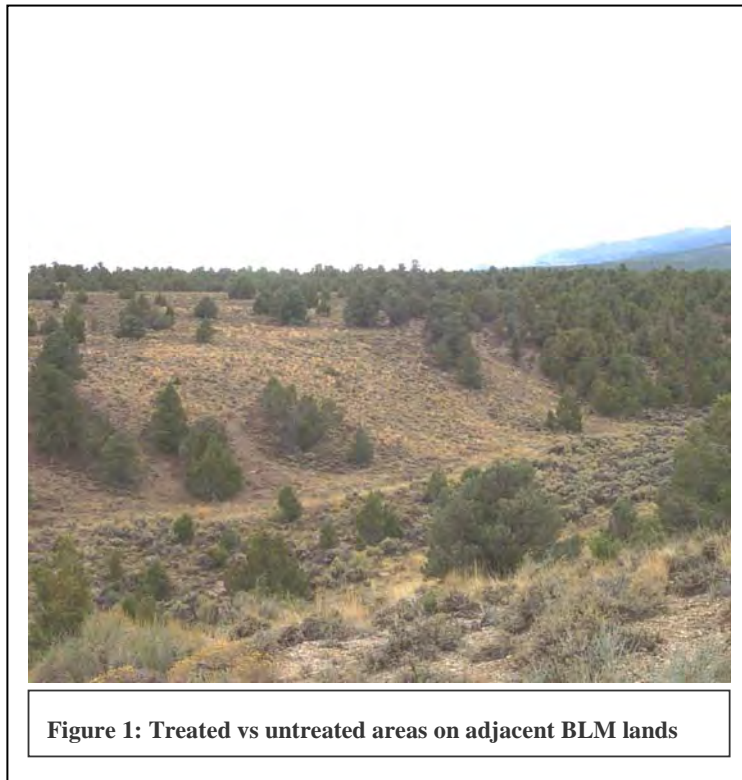


Figure 1: Treated vs untreated areas on adjacent BLM lands

Sagebrush and Mountain Mahogany

The project area consists of approximately 460 acres of sagebrush cover type. During prescribed burning, these areas will be minimally impacted. To carry the fire into adjoining pinyon-juniper some mountain big sagebrush will be ignited. In addition some strips may be burned in the higher elevation sagebrush patches. In the mechanical treatment, sagebrush is not targeted for cutting. Over the long term sagebrush would benefit from the reduction in pinyon-juniper expansion. There would be increased light, water, and nutrient resources for sagebrush, grass, and forb species.

Prescribed burning would reduce sagebrush canopy cover and reduce pinyon-juniper. Since pinyon-juniper is sparsely distributed in this cover type its possible that only a few trees would be burned. Prescribed burning would increase vegetative diversity and reduce pinyon-juniper expansion within the mountain big sagebrush cover type. The forb, grass, and shrub components are intact and would respond favorably to the burn.

Since the proposed action does not include mechanical treatment or active ignition in or near mountain mahogany, no measurable impacts are expected. In the unlikely event that the prescribed fire spreads to mountain mahogany areas, some short term mortality could occur. In the long term this could result in natural regeneration of mountain mahogany.

Cumulative Effects

Subwatersheds within the HUC (hydrologic unit code) 6 boundaries that contain the project area have been defined for use as the cumulative effects analysis (CEA) area for effects to vegetation. There are three subwatersheds, Mosier, Sawmill and Steptoe, appendix B maps the boundaries of these subwatersheds, Steptoe is the northern subwatershed, Mosier is the middle, and Sawmill is the southern. Past projects that have impacted the vegetative communities are historic grazing, wildfire suppression, and pinyon-juniper harvesting for charcoal making, firewood, and mechanical thinning on Ely BLM lands. Current activities that are having ongoing impacts are recreation use, mechanical thinning on Ely BLM lands and wildfire suppression. Other past and ongoing uses including mineral exploration and recreation were determined to be of a limited nature and therefore would not add to the cumulative impacts.

Cumulative impacts were analyzed in respect to the 1) rate of expansion of pinyon-juniper and 2) change in diversity of plant communities.

Cumulative treatment areas by subwatershed				
Subwatershed name	Steptoe	Mosier	Sawmill	Total Treatments
Total subwatershed acres	7,103	6,824	7,499	
Pinyon-juniper cover type acres by subwatershed	3,869	3,103	2,622	
Proposed mechanical treatment acres	402	2,351	500	3,253
Proposed prescribed fire treatment acres	0	25	819	844
Completed BLM mechanical treatment acres	580	262	64	906
Percentage of total proposed + completed treatment acres on p-j cover type	25%	85%	53%	

Under the proposed action, approximately 3,300 acres of pinyon-juniper will be mechanically thinned on slopes less than or equal to 30%. This action will add to the thinned acres that the BLM has completed on their lands within the area.

The proposed action will not eliminate pinyon-juniper expansion; it will slow the process where treatment occurs. The Mosier subwatershed will have the greatest amount of pinyon-juniper treatment occurring. Table 4 indicates there are 3,103 acres of pinyon-juniper cover type in the Mosier subwatershed. Mechanical thinning could occur on up to (2,351+262) 2,613 acres, or 84% of the pinyon-juniper. In the Mosier subwatershed, this will considerably slow the expansion and occupation of pinyon juniper, but since the treatment will be mechanical thinning, pinyon-juniper will still be present on these treated acres. In Mosier, 25 acres are scheduled for prescribed burning, <1%, however, within this treatment, it is more difficult to predict the remaining trees per acre, but the number of trees will be reduced. In the Steptoe subwatershed, the BLM has thinned 580 acres of pinyon-juniper; Forest Service proposes to thin 402, no prescribed burning is proposed in this subwatershed. This is a potential for 25% of the pinyon-juniper to be thinned in the Steptoe subwatershed. In Sawmill Canyon, BLM has thinned 64 acres; Forest Service proposes to thin 500 acres, a total of 22% of the existing pinyon-juniper. Another 31% is proposed to be treated with prescribed fire. Cumulatively, these treatments will slow pinyon-juniper expansion.

Weed Species

Affected Environment

There are small populations of Hoary Cress, Perennial Pepperweed, Canadian Thistle, and cheatgrass, within the project area. The Noxious Weeds Risk Assessment (FSM Chapter 2080 HTNF Supplement 2000-2004-1) rates this project area as a moderate risk, requiring prevention management measures and post-project monitoring for at least 3 years.

The Hoary Cress, Perennial Pepperweed, and Canadian Thistle populations are limited mainly to or near roadsides and make up less than 5 percent of the ground cover. The populations are recorded on the district weed map for several years and they are being treated annually. The populations are currently declining. Cheatgrass occurs throughout the site in low amounts.

Environmental Consequences

No Action

For the species present, Canada thistle is rated as a low threat in sagebrush shrublands and pinyon-juniper woodlands following a wildfire. Perennial pepperweed has an extensive below ground root system allowing the plant to sprout after above ground removal by mechanical means; fire top kill would probably have similar effects. Similarly, Hoary Cress has an extensive below ground root system and is known to sprout from root buds following fire (Fire Effects Information System, FEIS). Thistle has light windblown seeds which could easily disperse and germinate after a disturbance. There are some undocumented assertions regarding aggressive invasion of hoary cress post wildfire (FEIS). Cheat grass is rated as a high threat for post wildfire invasion by the Fire Effects Information System.

Currently, weed populations are low, and the majority of the project area is in Phase II, indicating that there still exists an understory which is capable of recovery after a disturbance. Wildfire occurrence during Phase I or II pinyon juniper dominance, in a site that has low levels of invasives may recover without non-native dominance, although cheatgrass populations will expand. Without treatment that reduces pinyon-juniper dominance, the trees will continue to dominate the site and progress to Phase III. The more tree dominated the woodlands become, the less likely they are to burn under moderate conditions. In addition, Phase III pinyon-juniper has lost much of the seed sources necessary to regenerate understory herbs, grasses, and shrubs (Miller *et. al.* 2008). Lack of treatment means that there would be an increased likelihood of invasives dominating the site after a wildfire.

Proposed Action

Within the project area, the risk for invasion by noxious/invasive weeds is moderate. The proposed action is not expected to spread weeds because noxious weed populations in the project area are currently low since they were treated in the summer of 2008 as part of the larger Forest-wide weed treatment program. In addition, all vehicles entering the project area must be washed within a designated staging area. Furthermore, following the

treatment, the project area will be monitored as part of the larger Forest-wide weed program for at least 3 years. If new populations are found, they will be added to the district weed priority list to receive appropriate treatment.

Hydrology/Geology

Affected Environment

The project area is contained within three sixth level (HUC 6) watersheds: Mosier Canyon Watershed (HUC 6 # 160600084004), Steptoe Creek (HUC 6 # 160600084005) and Sawmill Canyon Watershed (HUC 6 # 160600084006). There are no municipal watersheds in the project area. There are no perennial streams within the project area and there is one spring, Lowry Spring.

Several ephemeral stream channels are present. These include Lowry Canyon, Gallagher’s Canyon, Sawmill Canyon and several others that are unnamed. The channels are typically Rosgen A type, confined within steep and narrow canyons until they enter the valley bottom where they flatten and widen near the east border of the project. These drainages run to the east-northeast from the drainage divides at the top of Ward Mountain downslope to Steptoe Valley.

Elevations within the project boundaries range from 6,720 to 8,200 feet above sea level. A majority of the underlying geology consists of Quaternary sedimentary rocks. At higher elevations some Tertiary ash-flow tuffs are present along with some interbedded limestone, sandstone, and siltstone. Above these is Permian limestone with lenticular beds of sandstone.

Road Density and Stream Crossings

Road density within the analysis subwatersheds ranges from 0.71 to 0.91 mi² (Table 4). Generally road density ratings are considered, low – less than 1 mile per square mile; moderate – 2 to 3 miles per square mile; and high – greater than 3 miles of road per square mile of land. All subwatersheds have low road densities. Road-stream crossing density ranges from less than 1 per mi² to approximately 2 per mi². Streams crossings are a frequent source of sediment supply to streams. Road-stream crossings densities are considered to be low.

Subwatershed Characteristics and Description of Road Impacts						
Analysis subwatershed	Sub watershed area mi²	Miles of stream by type		Road - stream crossings	Miles of road	Road density mile per mi²
		perennial / intermittent	ephemeral			
Sawmill Canyon	11.72	0	23	6	8.78	.75
Mosier Canyon	10.66	0	20	5	14.91	.71
Steptoe Creek	11.10	0	19	2	10.05	.91

Surface and Ground Water

As previously discussed, all of the streams within the project area are ephemeral, which means they receive only temporary flow for relatively brief periods of time during and shortly after rain and snow melt. Channels are frequently not well defined. Banks of ephemeral streams often have scattered riparian trees, shrubs and grasses but cover is discontinuous.

Groundwater in and around the project area originates mainly as precipitation over the Egan Range between Murray Canyon and Sawmill Canyon and from subsurface flow from up-gradient areas above the valley floor. Groundwater flows from the recharge areas over the Egan Range to the west and the Duck Creek and Schell Creek Ranges on the east toward the valley floor and then north through Steptoe Valley. In the lowland areas, groundwater flow is to the north toward the McGill area and, ultimately, into Butte Valley, about 75 miles north of Ely.

Soils

During the scoping process, a concern was expressed regarding potential effects to cryptogammic soil crusts. Although biological crust organisms are present in most ecosystems, they are primarily found in arid and semi-arid areas that have low herbaceous plant density, low frequency and intensity of disturbance and a cover consisting primarily of native vegetation. Within the Lowry project area these are the black sagebrush sites located on the lower bench areas and on ridgelines with shallow soils. These areas have a long natural fire return interval.

Environmental Consequences

No Action

The lack of fuel treatment under no action would leave soil productivity and watershed values vulnerable to the damaging effects of future severe wildfires. A continued loss of grasses and shrubs and the ground cover they provide is expected as juniper and pinyon expand. Surface organic matter can be expected to change in composition as grasses and shrubs are replaced by pinyon and juniper. The subsequent shift in fuel type and loading will increase the intensity and residence time of fire on the soil. Predicted increases for erosion rates in the event of a wildfire are .89 to 3.8 tons per acres per year.

In the event of a future severe wildfire, affected areas may be highly susceptible to erosion, and generate large pulses of sediment to stream channels (Elliot and Robichaud 2001). Sediment may be stored in channels for many years until peak flows mobilize the materials and move them downstream. Large runoff events often follow severe wildfires, resulting in increased peak flows.

Soil cover can be expected to decrease as understory vegetation decreases. These shifts in biomass over large areas from ground fuels to canopy fuels will significantly impact fire behavior. Catastrophic wildfire, or a high severity fire, would likely consume additional organic materials on the forest floor and further reduce soil cover. If soil cover is reduced to bare soil following a wildfire, the soil would be more susceptible to erosion. In addition,

fire can volatilize organic compounds in the soil, some of which migrate down a temperature gradient and condense on soil particles below the surface (DeBano 1990). As a result, hydrophobicity (a non-wettable layer) can develop below the surface. This repellent layer can greatly reduce infiltration rates. During a precipitation event, soil above the non-wettable layer can become saturated and erode downslope due to rill formation and raindrop splash. Factors such as soil texture, slope, and post-burn precipitation intensity will affect the degree and type of post-fire erosion. Dry, coarse grained soils are particularly susceptible to this type of fire-induced hydrophobic condition (Clark 1994).

Proposed Action

The proposed action would have a low to moderate amount of ground disturbance due to mechanical treatment (e.g. equipment, and landings) and prescribed fire across the project area. As a result, there is a low to moderate risk that proposed treatments might stress the hydrologic system within individual subwatersheds.

Under the proposed action, the increase in equivalent roaded acres values range from two tenths of one percent to approximately 7 percent of the threshold of concern. These values for all subwatersheds would remain below threshold, with values ranging from 35 to 79 percent of the threshold.

The proposed action would have 3300 acres of mechanical treatment on slopes less than or equal to 30 percent; therefore there would be the potential for low to moderate amounts of ground disturbance from equipment and landings.

Losses to ground cover range from 1 to 4 percent of the treated area. Loss is short term one to two years. Long term ground cover conditions are expected to improve as grasses and shrubs recolonizes the treated area.

An 8.6 percent reduction in soil porosity over existing levels is expected after landings are subsoiled. The predicted soil erosion rates increase for the proposed action range from 0.03 to 0.53 tons per acre per year.

Wildlife

Affected Environment

Habitat within the Lowry Project area consists primarily of pinyon/juniper woodlands with interspersed sagebrush stands between 6,900 and 8,400 feet in elevation. At least two-thirds of the current pinyon/juniper woodlands in the Great Basin represent post-settlement expansion. More than half of these woodlands have reached or exceeded 60 percent relative tree dominance. Much of the rest is rapidly approaching that figure. At the current rate of growth fuel loads in these woodlands can be expected to at least double over the next 40 years. This will also be accompanied by a rapid increase in the continuity of the fuels as more and more of the landscape becomes fully tree dominated. This increase in fuel loads and fuel continuity can be expected to be accompanied by an increase in the size and intensity of wildfires (Chambers et al. 2004).

The Wyoming, mountain, and basin big sagebrush communities have been invaded by pinyon-juniper by several factors including the suppression of fire across the West (Tausch

et al. 1982, Gruell 1999). This is also true of the project area. Pinyon-juniper stands have expanded into big sagebrush/bunchgrass vegetative communities. With the closing of the canopy of pinyon-juniper woodland, the herbaceous and shrub understory will lose the resilience to respond after wildfire or other disturbances. This expansion has resulted in a significant reduction in the shrub and herbaceous vegetative community. In addition to reduction of desirable understory by closing of the pinyon and juniper canopy, the project area has exhibited significant increases in pinyon and juniper stand densities. Specific species are discussed below.

Sage Grouse

Affected Environment

Sage grouse are categorized as a Management Indicator Species (MIS) in the Humboldt National Forest Land and Resource Management Plan. The sage grouse is a species of upland game bird, and currently uses sagebrush and meadows located throughout the district. Sage grouse rely heavily on sagebrush communities. Sage grouse generally select low rolling hills and adjacent valleys especially where patches of big sagebrush are intermixed with areas of low sagebrush (Autenrieth 1981). Preferred areas are generally where slopes are less than 30 percent, although they are also found on steeper slopes. Standing water is an essential component of sage grouse habitat. The need for water depends on the availability of preferred, succulent vegetation and when the preferred forbs dry out (Autenrieth 1981, Klebenow 1985).

Breeding sites, or “leks” are usually situated on ridge tops or grassy areas surrounded by a substantial brush and herbaceous component (Schroeder et al., 1999). These breeding areas tend to be located at a point intermediate between the winter and summer range. Males perform a strutting display (Schroeder, et al., 1999) on established open areas usually 0.2 to 12 acres in size, but they may be as large as 100 acres or more (Autenrieth, 1981, Neel, 2001).

In Nevada, sage grouse populations have been monitored through lek counts during the spring and analysis of hunter wing returns. These counts have been coordinated by NDOW, and are not completed at each lek every year. A small percentage of leks are surveyed each year to determine sage grouse trends in Nevada. A minimum spring breeding population in 2006 was between 103,000 and 129,000 sage grouse for the entire conservation planning area of Nevada and eastern California. This was up 13 % from the 2005 estimates. The 2006 minimum spring breeding population estimate for the entire White Pine County Planning area was calculated at 8,142 sage grouse. This represents a 13% increase from the 2005 minimum estimate of 7,197 sage grouse (Nevada Sage-Grouse Conservation Project W-64-R-6, Federal Aid Report, pg. 3 and 11). In the spring of 2007 over 1,000 leks were visited and over 11,000 sage-grouse were observed on 545 active leks. These data, coupled with data collected in eastern California, generated a minimum spring breeding population estimate range of between 89,934 and 112,549 within the conservation planning area of Nevada and eastern California. These estimates are down approximately 13% from 2006 and are similar to 2005 estimates (Nevada Sage-Grouse Conservation Project W-64-R-7, pg 3). Ward Mountain falls within the Steptoe/Cave

PMU, but only comprises a very small portion of the northern part of the PMU. Therefore, sage grouse population estimates for this PMU do not represent an accurate number of birds for the Ward Mountain area. The sage grouse population estimates for the Steptoe/Cave PMU were 1,080 in 2003 and has decreased to 758 for 2006. (C. Baughman, 2008).

The closest known lek site is located in the Cave Valley PMU in Steptoe Valley, about two miles from sage grouse habitat within the project area. No signs of sage grouse were seen when the areas were visited on July 26 and 27, 2005, June 18 and 25, 2007, and September 25, 2008. No lek sites are known within the project area, although there are 430 acres of low sage and Wyoming big sage that could be used for a lek site. The area contains 460 acres of low sage, mountain and Wyoming big sage that could be used by sage grouse for a nesting/brood rearing and/or summer habitat. These areas would be considered marginal habitat due to the limited amount of herbaceous understory and mesic sites. Winter habitat for sage grouse is also marginal because the majority of the area is pinyon-juniper, not preferred sage brush.

Environmental Consequences

No Action

Under the No Action alternative current management would continue to guide management of the project area. No fuels treatments would be implemented to accomplish project goals. Woodland expansion within the project area has diminished the mountain big sage cover type to 10% and will continue to fragment this cover type over time. The sage cover type identified in the current vegetation map has pinyon scattered throughout the area. The expansion of pinyon-juniper will continue to reduce the productivity, abundance, and diversity of understory shrub and herbaceous species. As pinyon-juniper continues to expand into the sagebrush type, the sage would lose vigor and eventually die as the expansion progresses. In addition, as the expansion of the pinyon-juniper continues into the sagebrush habitats the potential for large-scale intensive wildfires increases. The potential for wildfires to occur is mid-July through September. The project area has only marginal habitat for nesting and early brood rearing and the potential for wildfires to occur is after this time period. Should a wildfire occur after mid-July, when birds could be on the summer habitat, impacts to the birds would be minimal as most birds would be able to escape the fire. The effects of wildfires to sage grouse would occur to the habitat. With the closing of the canopy of the pinyon-juniper woodland, the herbaceous and shrub understory will lose the resilience to respond after wildfire or other disturbances, and the areas are more likely to be invaded by noxious and invasive weeds. This expansion could result in a significant reduction in the shrub and herbaceous vegetative community, decreasing the quality and quantity of sage grouse habitat.

When a wildland fire happens this would increase the chance of a high severity stand replacement fire which would eliminate the understory and herbaceous species that the sage grouse depend on.

Under this alternative, sage grouse population trends are expected to remain static, or decrease because of the continued expansion of pinyon and juniper trees into the sagebrush

habitat and increase risk of high severity fire. The decrease in sagebrush and the understory component of forbs and grasses would continue to reduce the quality of sage grouse habitat.

Proposed Action

None of the treatments would impact any known lek sites as the closest lek is two miles away. The existing nesting/brood rearing habitat within the project area is marginal. The prescribed burn does not occur within potential habitat for sage grouse. The mechanical treatments would have the short and long-term benefits by maintaining the sagebrush community by removing the pinyon and juniper trees expanding into the sagebrush community. By removing the pinyon and juniper that are expanding into the sagebrush communities, habitat for sage grouse would improve. The existing nesting/brood rearing habitat is marginal and even though these treatments would have a long-term benefit by increasing the forb component, the area would remain marginal habitat due to the lack of mesic or riparian areas. The proposed action would reduce the potential of large scale wildfires in the area. Should a wildfire occur the impacts to the habitat would be reduced as the habitat would be more resilient and able to respond with desirable plant species.

This alternative would ultimately benefit sage grouse by allowing native plant communities to regenerate thereby restoring the sagebrush habitat. The reduction of pinyon-juniper canopy will increase sunlight and moisture available to the understory and the understory shrubs, grasses and forbs will increase. Sage grouse population trends are expected to remain static or increase because the project would have the beneficial effect by maintaining the sagebrush community by removing the pinyon and juniper that are expanding into the sagebrush community.

Effects of reduced wildfire

Northern Goshawk

Affected Environment

The Forest Plan identifies goshawks as a management indicator species for old growth cottonwood, aspen, and fir stands associated with riparian areas. Management indicator species are used to monitor habitat for goshawks and other species that use similar habitats. The Northern goshawk is found throughout most of North America, with a few isolated populations in the southeastern and central United States. In northern Nevada, goshawks breed in somewhat atypical habitat as compared to the rest of North America. In Nevada, Northern Goshawks are generally found between 6,000 and 10,000 feet elevation (Nevada Partners in Flight Bird Conservation Plan, 1999). Forest types used by western Goshawk populations include Douglas fir (*Pseudotsuga menziesii*), various pines, and aspen (*Populus tremuloides*). In high-elevation shrub steppe habitats, goshawks nest in small, widely-spaced stands of mature aspen trees that grow along creeks and drainages. These aspen stands are located primarily on north or east-facing slopes (Younk and Bechard 1994). The goshawk in northern Nevada is considered a year-round resident.

Goshawks have been known to nest within aspen stands in the Schell Creek, Ward Mountain and Mount Moriah ranges, and within aspen and/or cottonwoods in the White

Pine and Grant-Quinn ranges. The 1986 LRMP identified both the current and minimum viable population of goshawks to be 500 pairs, with a maximum potential of 1,000 pairs, and Amendment 2, July 1990. Data provided by NDOW identified a total of 141 nest sites on National Forest land within the Humboldt NF in 2001. (HNF Monitoring Report, 2008, pg 10)

A critical element for goshawks on the Ely Ranger District is the presence of aspen stands or stringers of aspen and cottonwood that follow the drainages, although a few nests have been found in pinyon pine. An active goshawk nest was found in a large pinyon tree in 2007 on the east side of Ward Mountain within the Lowry Project area.

Environmental Consequences

No Action Alternative

Under the No Action alternative current management would continue to guide management of the project area. No fuels treatments would be implemented to accomplish project goals. Woodland expansion within the project area has diminished the mountain big sage cover type to 10% and will continue to fragment this cover type over time. The sage cover type identified in the current vegetation map has pinyon scattered throughout the area. The expansion of pinyon-juniper will continue to reduce the productivity, abundance, and diversity of understory shrub and herbaceous species. As pinyon-juniper continues to expand into the sagebrush type, the sage would be lose vigor and eventually die as the expansion progresses. With the closing of the canopy of the pinyon-juniper woodland, the herbaceous and shrub understory will lose the resilience to respond after wildfire or other disturbances, and the areas are more likely to be invaded by noxious and invasive weeds. This expansion could result in a significant reduction in the shrub and herbaceous vegetative community, decreasing the quality and quantity of foraging habitat for goshawks. In addition under this alternative the potential for wildfire to affect the nesting habitat is greater. As the fuel load near the nesting habitat increases, the potential for a wildfire to remove the mature pinyon-juniper stand and alter the site to a grass/forb community no longer suitable for goshawk nesting increases. The potential for wildfires to occur is mid-July through September. There is the potential for a wildfire to impact nesting goshawks or chicks. Goshawks chicks fledge around July 1, but remain close to the nest until they disperse around mid-August.

Under this alternative, goshawk population trends are expected to remain static or decrease. No nesting habitat will be reduced by project implementation; a wildfire could alter the stand so that it was no longer suitable nesting habitat. Foraging habitat would still be available within and near the project area.

Proposed Action

With this alternative nesting habitat for goshawk will not be impacted. As the surrounding area is treated the potential for a wildfire to pass through the nesting habitat would be reduced. Foraging habitat should increase as the prey species for goshawks will use the sagebrush area near nesting habitat. Under this alternative, goshawk population trends are

expected to remain static or increase because the nesting habitat will not be reduced and foraging habitat should increase.

Migratory Birds

Affected Environment

The migratory birds selected for this analysis were derived from a priority species list for pinyon-juniper woodlands included in the Nevada Partners in Flight Bird Conservation Plan (Neel 1999). Priority migratory birds that are pinyon-juniper obligate species are the pinyon jay (*Gymnorhinus cyanocephalus*) and gray vireo (*Vireo vicinior*). Other species that could be affected by the project include the black-throated gray warbler (*Dendroica nigrescens*), gray flycatcher (*Empidonax wrightii*), juniper titmouse (*Baeolophus ridgwayi*), and mountain bluebird (*Sialia currucoides*).

Environmental Consequences

No Action

Under this alternative current management would continue to guide management of the project area. No fuels treatments would be implemented to accomplish project goals. Woodland expansion within the project area has diminished the mountain big sage cover type to 10% and will continue to fragment this cover type over time. The sage cover type identified in the vegetation map currently has pinyon scattered throughout the area. The expansion of pinyon-juniper will continue to reduce the productivity, abundance, and diversity of understory shrub and herbaceous species. As pinyon-juniper continues to expand into the sagebrush type, the sagebrush would lose vigor and eventually die as the expansion progresses. In addition, as the expansion of the pinyon-juniper continues into the sagebrush habitats the potential for large-scale intensive wildfires increases. The potential for wildfires to occur is mid-July through September. This would be after the nesting period for most migratory birds. Should a wildfire occur after mid-July, impacts to the birds would be minimal as most birds would be able to escape the fire. The effects of wildfires to migratory birds would occur to the habitat. With the closing of the canopy of the pinyon-juniper woodland, the herbaceous and shrub understory will lose the resilience to respond after wildfire or other disturbances, and the areas are more likely to be invaded by noxious and invasive weeds. This expansion could result in a significant reduction in the shrub and herbaceous vegetative community, decreasing the quality and quantity of the sagebrush habitat. There would also be affects to the pinyon-juniper woodland habitat. As the fuel loads in the pinyon-juniper woodlands habitat increases, the potential for a wildfire to remove the mature pinyon-juniper stand and alter the site to a grass/forb community no longer suitable for birds such as the pinyon jay that use this habitat increases.

Under this alternative migratory bird population trends are expected to remain static or decrease. Because of the continued expansion of pinyon and juniper trees into the sagebrush habitat, habitat quality and quantity would be expected to decrease because of the loss of brush species, and grasses and forbs. This would continue to reduce the quality and quantity of the sagebrush habitats. Both the sagebrush and pinyon-juniper woodlands

habitats would be at greater risk from wildfire reducing the quality and quantity of these habitats.

Proposed Action

The project will improve habitat conditions by targeting the expansion of the pinyon-juniper woodlands into the sagebrush habitat, with the goal of reducing pinyon-juniper canopy and re-establishing a shrub and herbaceous understory. Reducing fuel loads and treating the pinyon-juniper woodland in a mosaic pattern will provide opportunities for understory vegetation to increase or become established where it is currently out competed. The mosaic pattern of burning will allow for the persistence of mature dense stands of pinyon-juniper habitat within the project area. The reduction of pinyon-juniper canopy within the mechanical treatment areas will increase sunlight and moisture available to the understory and the shrubs, grasses and forbs will increase. This will increase foraging habitat for many birds and the residue trees will provide nesting habitat. Not all of the trees will be removed allowing for some nesting, foraging, and resting habitat to remain.

Migratory bird population trends are expected to remain static or increase because of this action. During implementation of the Lowry Project some nests could be lost if the prescribed burning occurs in the spring. This is a short-term loss with long-term gains because of maintaining the sagebrush habitat from further expansion of the pinyon-juniper trees. Treatments done after July 15 will not adversely affect nesting migratory birds or their associated habitats. All of the treatments will have a beneficial long-term affect by maintaining the sagebrush habitat.

Mule Deer

Affected Environment

Mule deer occur throughout the project area. Mule deer are categorized as a Management Indicator Species (MIS) for all vegetative types in the Humboldt National Forest Land and Resource Management Plan. Management indicator species are used to monitor habitat for mule deer and other species that use similar habitats.

The project area falls within the Nevada Department of Wildlife's (NDOW) Management Area 22. The encroachment of pinyon and juniper trees upward into mountain brush zones and downward onto bench areas is causing the long-term habitat for mule deer summer and winter range to slowly decline. In some areas, severe drought has resulted in loss of native vegetation and expansion of cheatgrass and noxious weeds (NDOW 2006-2007 Big Game Status).

The long term quality and quantity of summer ranges on the Ely Ranger District are slowly being reduced by pinyon/juniper forests taking over mountain brush zones. This continues to lower the carrying capacity for mule deer. This deteriorating condition also affects winter range, but it is believed that the effect on summer range has a greater impact to the deer herd. (NDOW 2006-2007 Big Game Status). The Lowry Project area is primarily deer summer range.

Environmental Consequences

No Action Alternative

Under the No Action alternative current management would continue to guide management of the project area. No fuels treatments would be implemented to accomplish project goals. Woodland expansion within the project area has diminished the mountain big sage cover type to 10% and will continue to fragment this cover type over time. The sage cover type identified in the current vegetation map currently has pinyon scattered throughout the area. The expansion of pinyon-juniper will continue to reduce the productivity, abundance, and diversity of understory shrub and herbaceous species. As pinyon-juniper continues to expand into the sagebrush type, the sage would be lose vigor and eventually die as the expansion progresses. In addition, as the expansion of the pinyon-juniper continues into the sagebrush habitats the potential for large-scale intensive wildfires increases. The potential for wildfires to occur is mid-July through September. The effects of wildfires to mule deer would occur to the habitat. With the closing of the canopy of the pinyon-juniper woodland, the herbaceous and shrub understory will lose the resilience to respond after wildfire or other disturbances, and the areas are more likely to be invaded by noxious and invasive weeds. In addition, a high severity stand replacing fire can eliminate the vegetation necessary for mule deer forage and cover.

Under this alternative mule deer population trends are expected to remain static or decrease. Because of the continued expansion of pinyon and juniper trees into the sagebrush habitat, habitat quality and quantity would be expected to decrease because of the loss of brush species, and grasses and forbs. This would continue to reduce the quality and quantity of deer summer range.

Proposed Action

The Lowry project is designed to decrease the expansion of pinyon/juniper into sagebrush habitats. The reduction of pinyon-juniper canopy will increase sunlight and moisture available to the understory and the understory shrubs, grasses and forbs will increase. Reducing fuel loads and treating the pinyon-juniper woodland in a mosaic pattern will provide opportunities for understory vegetation to increase or become established where it is currently out competed. The reduction of pinyon-juniper canopy within the mechanical treatment areas will increase sunlight and moisture available to the understory and the shrubs, grasses and forbs will increase. This will increase foraging habitat for mule deer. The proposed action would reduce the potential of large scale wildfires in the area. Should a wildfire occur the impacts to the habitat would be reduced as the habitat would be more resilient and able to respond with desirable plant species.

Under this alternative mule deer population trends are expected to remain static or increase. The proposed treatments would increase the quality and quantity of deer summer range in the area which are being reduced by the expansion of pinyon-juniper.

Rocky Mountain Elk

Affected Environment

Elk are very adaptive and are able to live in many habitats, including sagebrush/grass, grasslands, shrub, pinyon-juniper, and aspen vegetation communities. Elk have a broad dietary tolerance and will consume grasses, other herbaceous plants, and browse (NDOW Elk Species Management Plan 1997). Elk have made continual increases in numbers in east-central Nevada.

The project area falls within the Nevada Department of Wildlife's (NDOW) Management Area 22. Improved precipitation in these areas between 2004 and 2006 improved habitat conditions such as cover, water distribution, forage quantity, and forage quality. Aerial surveys flown by NDOW in December of 2006 and January of 2007 in hunt units 111-115, 221, and 222 resulted in the classification of 2,611 elk. Overall habitat conditions should remain average or above average, and distribution of elk within this unit continues to improve. The elk herds in these units continue to support a high bull to cow ratio and a strong component of mature bulls in the population (NDOW 2006-2007 Big Game Status). Rocky Mountain elk occur throughout the area. Some habitats are more important than others, such as riparian areas and wet meadow vegetation. Potential foraging, calving, and/or winter habitat is present on Ward Mountain.

Environmental Consequences

No Action Alternative

Under the No Action alternative current management would continue to guide management of the project area. No fuels treatments would be implemented to accomplish project goals. Woodland expansion within the project area has diminished the mountain big sage cover type to 10% and will continue to fragment this cover type over time. The sage cover type identified in the current vegetation map currently has pinyon scattered throughout the area. The expansion of pinyon-juniper will continue to reduce the productivity, abundance, and diversity of understory shrub and herbaceous species. As pinyon-juniper continues to expand into the sagebrush type, the sage would lose vigor and eventually die as the expansion progresses. In addition, as the expansion of the pinyon-juniper continues into the sagebrush habitats the potential for large-scale intensive wildfires increases. The potential for wildfires to occur is mid-July through September. The effects of wildfires to elk would occur to the habitat. With the closing of the canopy of the pinyon-juniper woodland, the herbaceous and shrub understory will lose the resilience to respond after wildfire or other disturbances, and the areas are more likely to be invaded by noxious and invasive weeds. In addition, a high severity, stand replacing fire would remove vegetation that elk utilize for forage and cover.

Under this alternative elk population trends are expected to remain static. The project area could be used by elk for foraging during the summer or winter. Because of the continued expansion of pinyon and juniper trees into the sagebrush habitat, habitat quality and quantity would be expected to decrease because of the loss of brush species, and grasses and forbs. This would continue to reduce the quality and quantity of elk habitat in the area.

Proposed Action

The Lowry project is designed to decrease the expansion of pinyon/juniper into sagebrush habitats. The reduction of pinyon-juniper canopy will increase sunlight and moisture available to the understory and the understory shrubs, grasses and forbs will increase. Reducing fuel loads and treating the pinyon-juniper woodland in a mosaic pattern will provide opportunities for understory vegetation to increase or become established where it is currently out competed. The reduction of pinyon-juniper canopy within the mechanical treatment areas will increase sunlight and moisture available to the understory and the shrubs, grasses and forbs will increase. This will increase foraging habitat for elk. The proposed action would reduce the potential of large scale wildfires in the area. Should a wildfire occur the impacts to the habitat would be reduced as the habitat would be more resilient and able to respond with desirable plant species.

Under this alternative elk population trends are expected to remain static or increase. The proposed treatments would increase the quality and quantity of elk summer range in the area which are being reduced by the expansion of pinyon-juniper.

Pygmy rabbits

Affected Environment

There are known pygmy rabbit sites nine miles to the southeast and seven miles to the north of the project area in Steptoe Valley. Potential habitat for the pygmy rabbit is present in patches within some drainage bottoms within the project area. Using RSAC data there are about 400 acres of sagebrush habitat in four sites within the project area. Two of the sites had potential habitat for pygmy rabbits. Surveys showed sign of pygmy rabbits in one of the sites.

Environmental Consequences

No Action

Under the No Action alternative current management would continue to guide management of the project area. No fuels treatments would be implemented to accomplish project goals. Woodland expansion within the project area has diminished the mountain big sage cover type to 10% and will continue to fragment this cover type over time. The sage cover type identified in the vegetation map has pinyon scattered throughout the area. The expansion of pinyon-juniper will continue to reduce the productivity, abundance, and diversity of understory shrub and herbaceous species. As pinyon-juniper continues to expand into the sagebrush type, the sage would be lose vigor and eventually die as the expansion progresses. In addition, as the expansion of the pinyon-juniper continues into the sagebrush habitats the potential for large-scale intensive wildfires increases. Pygmy rabbits are probably capable of escaping slow moving fires, however, they may be burned or die of asphyxiation in some fires. Although pygmy rabbits use burrows, the burrows do not always provide them with effective protection from fire (FEIS, September, 2004). With the closing of the canopy of the pinyon-juniper woodland, the herbaceous and shrub understory will lose the resilience to respond after wildfire or other disturbances, and the areas are more likely to be invaded by noxious and invasive weeds.

Under this alternative, pygmy rabbit population trends are expected to remain static, or decrease because of the continued expansion of pinyon and juniper trees into the sagebrush habitat. The decrease in sagebrush and the understory component of forbs and grasses would continue to reduce the quality and quantity of pygmy rabbit habitat.

Proposed Action

None of the treatments would impact any potential pygmy rabbit habitat. Pinyon or juniper trees that need to be removed from these areas will be removed with chainsaws and accessed by foot. The prescribed burn does not occur within potential habitat for pygmy rabbits. The mechanical treatments would have the short and long-term benefits by maintaining the sagebrush community by removing the pinyon and juniper trees expanding into the sagebrush community. By removing the pinyon and juniper that are expanding into the sagebrush communities, habitat for pygmy rabbits would improve. The proposed action would reduce the potential of large scale wildfires in the area. Should a wildfire occur the impacts to the habitat would be reduced as the habitat would be more resilient and able to respond with desirable plant species.

This alternative would ultimately benefit pygmy rabbits by allowing native sagebrush communities to regenerate thereby restoring the sagebrush habitat. The reduction of pinyon-juniper canopy will increase sunlight and moisture available to the understory and the understory shrubs, grasses and forbs will increase. Pygmy rabbit population trends are expected to remain static or increase because the project would have the beneficial effect by maintaining the sagebrush community by removing the pinyon and juniper that are expanding into the sage brush community.

Cumulative Effects

The Cumulative Effects Area (CEA) delineated for wildlife species for this project is the 21,425 acres of the HUC 6 Sub-Watershed Boundaries for Mosier/Sawmill/Steptoe. This includes 9,600 acres of pinyon/juniper woodland habitats and 4,644 acres sagebrush habitat that currently exist within the area. This pinyon/juniper habitat has a variety of canopy coverages, densities, fuel loadings, and supporting understory vegetation that provides foraging, nesting, and/or cover habitat for the wildlife species that use the pinyon/juniper woodland and sagebrush habitat. The CEA represents a large landscape surrounding the project where past, present, and future management actions by humans have or may occur and allow us to determine these effects to these species.

This cumulative effects analysis does not attempt to quantify the effects of past human actions by adding up all prior actions on an action-by-action basis. There are several reasons for not taking this approach. First, a catalog and analysis of all past actions would be impractical to compile and unduly costly to obtain. Current conditions have been impacted by innumerable actions over the last century (and beyond), and trying to isolate the individual actions that continue to have residual impacts would be nearly impossible. Second, providing the details of past actions on an individual basis would not be useful to predict the cumulative effects of the proposed action or alternatives. In fact, focusing on individual actions would be less accurate than looking at existing conditions, because there is limited information on the environmental impacts of individual past actions, and one can

not reasonably identify each and every action over the last century that has contributed to current conditions. Additionally, focusing on the impacts of past human actions risks ignoring the important residual effects of past natural events, which may contribute to cumulative effects just as much as human actions. By looking at current conditions, we are sure to capture all the residual effects of past human actions and natural events, regardless of which particular action or event contributed those effects.

Other activities within this area that most likely would influence the vegetative component of the project area are future prescribed burning, if deemed appropriate following fuels assessment and maintenance of the successfully burned areas to support sage brush and associated species; livestock grazing; fuel wood gathering; and recreation activities. Future projects involving the maintenance or increasing the sagebrush understory in combination of retaining large, intact blocks of pinyon pine would have long-term beneficial effects to the pinyon/juniper woodland habitat that support a variety of other wildlife species.

This area also includes all activities and management actions that are authorized on both public and private lands within the boundaries of the Ely Ranger District. Implementation of the Lowry Project, in combination with these present and foreseeable future projects would not likely to cause a decline in populations trends for any of the wildlife species.

Livestock Grazing:

There is presently one sheep allotment within the project area. This allotment has not been grazed since 2005 and would not be grazed for two years after treatment. The permittee will continue with non-use for at least two years after treatment. Consequently the potential for cumulative effects is limited.

Wildfire/Prescribed Fire/Vegetation Treatments:

Past and Present: Fire suppression has allowed pinyon-juniper stands to expand into big sagebrush/bunchgrass vegetative communities. With the closing of the canopy of pinyon-juniper woodland, the understory including herbaceous and shrub understory will lose the resilience to responds after wildfire or other disturbances. This expansion has resulted in a significant reduction in the shrub and herbaceous vegetative community. No past vegetation treatments have occurred on the Ely RD within the sub-watershed, while the BLM has done mechanical thinning within their portion.

Foreseeable Future: Wildfire suppression will continue; however, the proposed action, along with the thinning on BLM lands will decrease the overall fuel loading, decreasing fire intensity and severity, and aiding suppression efforts. Additional maintenance prescriptions within the proposed project area may be warranted in the near future. The project area needs to continue to have the pinyon/juniper woodlands managed for improved understory shrub and herbaceous cover and diversity. Future projects involving the maintenance or increasing the sagebrush understory would continue to provide dense stands of this woodland type habitat that supports a variety of wildlife species. The BLM and the Forest Service are planning landscape-scale vegetation projects on the lands on and near Ward Mountain. Restoration (vegetation treatments) in Ward Mountain are being

designed to change the vegetation communities to a more balanced distribution of habitat types and age classes. Treating vegetation would result in some changes to wildlife habitats within the project areas. These projects are being proposed in part to improve wildlife habitat.

The combinations of these actions to wildlife habitats would be considered minimal to beneficial, as the reduced fuel loading would help prevent a wildfire from removing larger acres of habitat, and the sagebrush habitat would be maintained by the reduction in the expanding pinyon and junipers.

Fuelwood Gathering:

There are no commercial pine nut or fuelwood harvest units within the project area. Personal use fuelwood permits are limited to the harvest of dead and down pinyon, juniper, and white fir. Mountain mahogany can be harvested after August 1. A minor amount of personal use fuelwood harvesting occurs within and adjacent to the project area. Of the 636 cords of personal use fuelwood sold on the Ely ranger district in fiscal year 2008, 65 were sold in the Lowry area. Cumulative effects to wildlife and wildlife habitat from fuelwood gathering are expected to be minimal when combined with this project. Fuelwood gathering would increase near the roads within the prescribed fire treatment area, but this would only occur within about 500 feet of the road. The cumulative effects of these actions would be considered minimal to wildlife habitats, as only a small portion of the area would see an increase to fuel wood gathering. Overall fuelwood harvesting levels are expected to remain relatively stable into the future, reducing the potential for cumulative effects.

Recreation/ATV Use:

Past: Recreation activities, such as camping, hiking, and hunting have not historically been a major factor in the project area. There are no campgrounds within the CEA, and little dispersed camping occurs. Hunting is the major recreation activity that occurs within the CEA.

Present and Foreseeable Future: Recreation use will continue. No new developed recreation facilities are planned over the next ten years. An EA for Travel Management for the Ely Ranger District was signed in February 2009. This will reduce the amount of routes and prohibit motor vehicle use off the designated NFS roads and NFS trails. These road closures and prohibition of motor use off designated routes, along with the restoration treatments from the Lowry Project, would ultimately benefit wildlife species through out the area by allowing native plant communities to regenerate thereby restoring the connectivity of important habitats and reducing the amount of disturbance to wildlife from motor vehicles. The combination of these actions would be beneficial to wildlife by reducing the number of routes within the area and maintaining the sagebrush habitat.

Rare Plants

Affected Environment

Rare plant and habitat surveys were conducted on site in July, 2005, and June, and July, 2006. These surveys found no R4 Sensitive plants in the Lowry project area but potential habitat was documented for Scorpion milkvetch, Pennell draba, Mount Moriah beardtongue and Currant Summit Clover.

Environmental Consequences

No Action

The no action alternative may affect some rare plant species with potential habitat in the project area. This expansion of the pinyon-juniper into the sagebrush habitats increases the potential for large-scale intensive wildfires. With the closing of the canopy of the pinyon-juniper woodland, the herbaceous and shrub understory will lose the resilience to respond after wildfire or other disturbances. This expansion could result in a significant reduction in the shrub and herbaceous vegetative community and reduce the potential for recovery of the understory species including rare plants. A high intensity wildfire could change the suitability of the rare plant habitat by the introduction of invasive weeds, loss of the understory in degraded conditions, fragmentation, and loss of the seed bank.

The Currant Summit clover occupies the pinyon-juniper woodland habitat occurring on rocky volcanic soils. Mount Moriah beardtongue and Scorpion milkvetch occur in habitat that are likely to burn during wildfire. These areas could carry a high intensity wildfire. Potential habitat for Pennell draba is present on the rocky ledges, crevices, or cliffs within the project area. These areas are not likely to be affected by wildfire, as fire would not usually carry due to sparse understory and overstory fuels, nor from expansion of the pinyon-juniper because of these habitats do not readily support dense stands of pinyon-juniper.

The increased risk of large-scale, intense wildfire and resulting changes in understory composition under this alternative may impact individuals or habitats of but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species for Scorpion milkvetch, Mount Moriah beardtongue, and Currant Summit clover.

Proposed Action

The proposed action may affect rare plant species with potential habitat in the project area. Potential habitat for Pennell draba is present on the rocky ledges, crevices, or cliffs within the project area. These areas are not proposed for treatment, although fire may carry into the habitat in limited areas.

Potential habitat for Scorpion milkvetch, Mount Moriah beardtongue, and Currant Summit clover occur within the prescribe fire treatment area. Whether herbaceous plants recover after fire depends largely on whether their regenerative structures are exposed to lethal temperatures. A spring burn would have the most direct impacts, but the emphasis would be in burning the crowns of the trees and not the ground vegetation. Heat from a crown fire in the spring may damage the plants and prevent reproduction for the year. If the

spring burn occurs before significant drying has occurred to the duff layer, less tree canopy will be killed and consumed and few buried plants will be killed (Brown, 2000). Any surface fire near the plants is likely to remove the plant to the caudex and a high intensity fire is likely to kill the entire plant. A fall or winter burn would create the lowest level of disturbance because if the plants are present they would be dormant and would have already set seed. A fall or winter burn will also give many shrub, forb, and grass species a chance to disperse their seeds before the fire, thus increasing the chances for successful post-fire natural regeneration. A spring burn would be more effective treatment of cheatgrass that are present if conducted before the seed head shatters (Zouhar, 2003).

Potential habitat for the Scorpion milkvetch and Mount Moriah beardtongue occur within the mechanical treatment areas. Potential impacts would occur from the equipment crushing the plants if they are present, compaction and disturbance of the soil, and the potential increase in the distribution and density of invasive and noxious weeds. If a mastication method is used there would be an increase of organic matter/chips as masticated debris is broadcast away from the machine and left on the ground. Following the proposed treatments, organic matter on the soil surface would decrease in some areas, due to mechanical displacement, while organic matter would increase in other areas due to additions of masticated material. This may result in a mosaic pattern of organic matter. Patches of organic matter would provide habitat soil organisms, while bare areas would be available for germination of plants, but would be more susceptible to local erosion. Increases in woody materials on the forest floor due to mastication may cause short term changes in decomposition and carbon and nutrient dynamics in affected areas. Microorganisms that decompose wood would immobilize nitrogen and other nutrients while decaying the woody material. As the wood decomposes, those nutrients would be released and made available to plants and other organisms (Swift 1977). Microclimate changes at the forest floor due to reduced canopy cover can alter rates of decomposition and nutrient turnover in the surface fine organic matter of harvested stands (Edmonds 1985). Piling and burning of slash may occur on the landings (approximately 13 to 33 acres of piles would be generated if the entire area was piled). If occupied habitat is identified in the location of the landings, the landings will be moved.

This project would impact potential habitat for Scorpion milkvetch, Pennell draba, Mount Moriah beardtongue, and Currant Summit clover. A spring burn would have the most direct impacts, but the emphasis would be in burning the crowns of the trees and not the ground vegetation. A fall or winter burn would occur when the plant is dormant below ground such that direct impacts to the plant will be limited. If the mastication method is used plants could be covered by debris, potentially setting back growth for a few of years, until decomposition occurs. The decomposition would have the beneficial effect of increasing nutrients in the soil. Either mechanical method could crush plants and compact the soil. These impacts would be short term.

The proposed action may impact individuals or habitats of Scorpion milkvetch, Pennell draba, Mount Moriah beardtongue, or Currant Summit clover but will not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species.

Heritage Resources

Affected Environment

The Ely Ranger District contains numerous cultural resources. For the past 11,000 years, these mountain ranges have served man as 'islands' of lush vegetation, wildlife habitat and water, compared to the surrounding 'sagebrush ocean'. Man's use in the area is marked with prehistoric/ethnographic sites that include: artifact scatters (lithics, ground stone, fire-altered rock and ceramics), open campsites, trails, rock shelters, habitation sites, stone circles, lithic sources/quarries, and rock art sites.

Historic archaeology sites include sites related to transportation (i.e., wagon roads and stage stations), mining (towns, buildings, foundations, shafts, adits, debris scatters, mines and mills), ranching/farming (corrals, water lines, fences and pastures), communication (telegraph lines and trails), government (Civilian Conservation Corps camps and projects) and numerous other site types. The majority of historic sites in the Ely Ranger District are related to mining. Historic mining on Ward Mountain took place from 1872 to 1888 and sporadically throughout the 20th century. During the historic mining of the 19th century, pinyon pine, juniper and mountain mahogany trees were harvested for charcoal production. Charcoal was created at the Ward Charcoal Ovens or hastily made in surface kilns. The charcoal was used to process the silver ore from the mines at the ghost town of Ward. Evidence shows that tree cutting in the area for charcoal or fuel wood cutting in the 19th century was scattered across the eastern slope of Ward Mountain and concentrated around the Charcoal Ovens, the Ward Town Site and up most drainages (Thomas 2006). Evidence of some 19th century wood cutting/charcoal making is present in the project area. The entire mechanical treatment area was inventoried with 30-meter transects. Four hundred acres of the prescribed burn area was inventoried with 30-meter transects. These transects are located on the high and moderate sensitivity areas. Consultation was conducted with the SHPO to revise the inventory from a Class III inventory to a 100% inventory of the high and moderate sensitivity areas for the prescribed burn area. Much of the low probability area is within steep slopes, but other low sensitivity areas were surveyed as well. This model illustrates cultural resource sensitivity by incorporating known site locations, slope, elevation, and distance to water.

A total of 77 heritage resources were recorded as a result of this project. Eight sites were determined eligible for listing on the National Register of Historic Places for their potential to provide important information in the prehistory or history of the area. These sites are lithic scatters, prehistoric campsites and historic charcoal making sites.

Another 65 sites are not eligible. Most of these are small non-descriptive lithic artifact scatters that do not have artifacts that place them in a particular time period, do not have potential for subsurface information or they have been moved from their original location by erosion. The remaining four sites need further evaluation, but will be treated as eligible sites. These sites are lithic scatter/stone circles, prehistoric campsites and one rock shelter.

Environmental Consequences

No Action

If no action is taken place the increase in hazardous wildland fuels will increase through time. This increase in hazardous fuels will increase the potential for larger, unmanaged wildland fires. These fires may have the potential to affect eligible cultural resources within and outside of the project area.

Proposed Action

The Lowry Fuels Reduction Project will reduce fuels on Ward Mountain which will lessen the severity of a wildland fire near Ely, Nevada. This would reduce the potential for serious adverse effects to the environment and to historic properties. Adverse affects from implementing the project will be avoided by flagging and avoiding historic properties during the mechanical treatment and by implementing measures to protect heritage properties within the prescribed burn area. In conclusion, there will be no adverse effects to eligible or unevaluated cultural resources from implementation of this project.

This conclusion is based on flagging and avoiding all eligible and unevaluated sites with a 50-meter buffer and implementing these measures for the prescribed burn area:

- The trees around each site will be “thinned out” for 30 meters in all directions.
- There will be no active ignition either by hand or aerial near each site.
- Each site will be flagged for avoidance.
- There will be no ground disturbing activities at these sites.
- An archaeologist will be present during the operation.

The potential for adverse effects will be further reduced because the prescribed burn will be implemented in a controlled fashion under the proper weather conditions. This will reduce the impact of the fire on the ground and considerably reduce the potential damage to sites and artifacts from an uncontrolled wildland fire.

Livestock Management

Affected Environment

The Lowry area has not been grazed by livestock for the last four years. The project is within the East Ward Allotment. This allotment is administrated by the Ely Ranger District on the Humboldt-Toiyabe National Forest. The East Ward Allotment is 18,261 acres with 4,500 acres in the project area. Grazing is permitted from July 1st through July 20th with 912 ewes and lambs. The utilization standards set for this allotment are in riparian grasses it is 45%, riparian shrubs are 35% browse and in the uplands it is 60% for grasses and 50% for the upland shrubs. Permitted us on East Ward is authorized for Blue Diamond Oil Corporation.

The last year that this allotment had been utilized was 2004. Permittee did not graze in 2005 due to lack of water and the Forest Service requested Non-Use from 2006 to present time due to poor vegetation conditions, lack of water, and water improvement in disrepair.

Environmental Consequences

No Action

Under the no action alternative, the area would remain at risk to a major wildfire, disrupting potential future grazing use.

Proposed Action

Approximately 4,500 acres are proposed to be treated within the East Ward allotment. It is anticipated that 19% of these acres will be treated with prescribed fire and 72% of the acres will be mechanically treated. The proposed action is expected to remove vegetation with regrowth occurring the following spring. It is anticipated that the recovery from both treatments will enhance the range condition based on the increased ground cover and diversity of the recovering plant community.

Livestock grazing would be prohibited for at least a two year rest period after the burn treatment. Although the allotment is currently not used, this rest period could potentially cause some hardship for the permittee should they decide to resume grazing in the future.

Cumulative effects

Cumulative effects were analyzed within the East Ward allotment. Indicators for analysis within this allotment are the amount of available forage and rangeland health. Recreation and visitor use on this allotment occurs from OHV use - the area is very accessible to the public. Some wood cutting, Christmas tree harvesting, camping, hunting and pine nut gathering occurs on the allotment. These activities have a minimal impact on the grazing program on this allotment and would not be expected to contribute to any cumulative effects on livestock grazing.

Findings Required By Other Laws and Regulations

- The Proposed Action is in compliance with the Humboldt National Forest Land and Resource Management Plan (1986) as amended.
- The Proposed Action is in compliance with the Clean Water Act. The project area contains very limited riparian areas and water resources. The project does not involve the filling, alteration or modification of any waterway or riparian area.
- The Proposed Action is in compliance with the Clean Air Act, 1977 as amended. All required permits would be secured to ensure compliance with federal and state laws. Pollutant emissions would be within state and federal standards.
- The Proposed Action is in compliance with Executive Orders 11988 and 11990 of May, 1977 adopted for the protection of wetlands and floodplains. The Proposed Action would have no effect on any wetlands or floodplains.
- The Proposed Action is in compliance with the Endangered Species Act (ESA) of 1973, as amended. There would be no effect on threatened or endangered species as a result of The Proposed Action.
- The Proposed Action is in compliance with the American Antiquities Act of 1906 and the Historic Preservation Act of 1966. There would be no adverse effects on any historic properties as a result of the proposed action (see concurrence letter from the Nevada State Historic Preservation Office dated July 23, 2007 which is located in the project record).
- The Proposed Action is in compliance with Executive Order 12898 on Environmental Justice that requires federal agencies to consider impacts of proposed actions on minority and low-income populations.
- The Proposed Action is in compliance with the Migratory Bird Treaty Act as the project has been designed to avoid take of migratory birds.
- The Proposed Action is in compliance with the Bald and Golden Eagle Protection Act as the project would not result in the take of any eagles.

CONSULTATION AND COORDINATION

<i>List of Preparers</i>			
Name	Responsibility	Education	Years Experience
Jose Noriega	District Ranger	BS Wildlife Management	17
David Loomis	ID Team Leader, NEPA	MS Land Use Planning Policy BA Economics	29
Carol Carlock	Project Mgr., Fuels/Grazing	Qualified by experience	27
Julia Richardson	Vegetation	BS Forestry	20
Amanda Kriwox	GIS	MS Geotechnology BS Geology	7
Nate Thomas	Heritage Res.	BS Anthropology, MA Archaeology	10
Barbara Drake	Watershed	BS Earth Sciences	13
Lyndsay Fonger	Fuels	Qualified by experience	11
Kathleen Johnson	Wildlife	BS Wildlife Management	20

Federal, State, and Local Agencies Contacted:

Nevada State Clearinghouse

U.S. Fish and Wildlife Service

Nevada State Historic Preservation Office

U.S. Bureau of Land Management

White Pine County

Tribes:

Ely Shoshone Tribe

Duckwater Shoshone Tribe

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