

Strategic Fuel Breaks
in the
Three Rivers Resource Area

Environmental Assessment
OR-025-03-030

Bureau of Land Management
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May 21, 2004

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CHAPTER 1: INTRODUCTION/PURPOSE OF AND NEED FOR ACTION

1.1 Summary of the Proposal

The Burns District Bureau of Land Management (BLM) proposes to conduct approximately 320 miles of fuels treatments within strategic fuel break planning zones (Appendix A) to optimize wildfire suppression activities and provide greater levels of safety in the Three Rivers Resource Area (RA). This would be accomplished through mechanical fuels treatments such as brush beating sagebrush, noncommercial understory thinning of coniferous trees, overstory reduction of western juniper (*Juniperus occidentalis*), mechanical and hand piling of slash, and fall burning of slash piles. This proposal would be implemented over a 5 to 7-year period beginning with the Lone Pine, Silver Creek, and Poison Creek fuel break planning zones (Appendix A) which potentially contain some of the highest Wildland Urban Interface (WUI) acres.

The fuel break planning zones (roughly 1,000,000 acres) encompass the northwest, northeast, and southeast portions of the RA (Appendix A) and cross land management and ownership boundaries. This Environmental Analysis (EA) analyzes treatments on Public Lands only, however, it has planning components that could be used as a reference to facilitate future potential actions on non-BLM-managed lands due to the analysis being substantially similar with regard to resource concerns.

1.2 Need for the Proposed Action

Years of successful wildfire suppression in concert with climate changes and past grazing practices have modified natural fire regimes and contributed to unnaturally high fuel loadings throughout the RA. As a result, much of the RA is at risk from large wildfires. During the time period between 1993 and 2002, wildfires have burned 173,817 acres of the Burns District (Burns Interagency Fire Zone files). This number represents natural starts as well as human-caused starts and includes both Three Rivers and Andrews RAs within the Burns District.

The RA contains 1,709,918 acres of diverse landscapes and plant communities (Three Rivers Resource Management Plan/Record of Decision (RMP/ROD), 1992). The RA borders and/or surrounds a variety of private, State, Tribal, and other landownerships. Dispersed recreation sites and other resource use brings human life and private structures within the potential area of effect from large wildfires. Protection of life and property are the priority concerns. Other resource values at risk from wildfire within this RA include wildlife habitat (for sensitive species such as sage-grouse and pygmy rabbit), commercial forest, cultural resources, recreation, fisheries, and Wilderness Study Areas (WSAs).

Wildfire is a natural component of many Northern Great Basin ecosystems. Climate shifts, early grazing practices, and past (and current) fire management practices of full suppression have altered historic fire return intervals in most plant communities resulting in excessive fuel concentrations. As a result, wildfires which historically burned at lower intensities due to lower fuel concentrations now burn at higher intensities. These higher intensity fires pose greater threats to public and firefighter safety, and at the same time exacerbate possible negative fire effects on the ecosystem.

1.3 Purpose of the Proposed Action

The purpose of this Proposed Action (PA) is to make populated areas, ranches, dispersed recreation sites, and other humanmade resources, as well as natural resources, more defensible from erratic fire behavior. This would be accomplished by dividing a major portion of the RA into 14 strategic fuel break planning zones and then providing each zone with internal and planning unit boundary fuel breaks using the methods spelled out in this PA. These zones would be defined primarily by roads and trails as seen on the fuel break zone maps (Appendix A). These roads and trails currently function as limited fire breaks and with some additional fuels reduction treatment they would be safer for firefighters, cooler in temperature (during fire events), and strategically valuable to wildland fire suppression efforts.

Potential Benefits:

Safety

- Increased ability to contain large-scale fires.
- Increased ability for strategic deployment of fire suppression resources.
- Increased ability to protect life (firefighter and public).
- Increased ability to protect private, Tribal, State, and Public Lands.

Economics

- Multiple contracts during a multi-year implementation period may be awarded as a result of this project.
- Certain portions of this project can be accomplished using local fire crews.
- WUI Community Assistance Grants. The BLM, in addition to treating fuels in the WUI on Federal lands, is working cooperatively with other agencies to help resolve WUI fire issues on State-protected, Tribal, and private lands.

Resource Protection

- The containment of large-scale wildland fires could result in reduced wildlife loss and wildlife habitat loss.
- The containment of large-scale wildland fires could result in reduced loss of recreation opportunities.
- Historic structures would have fuel breaks surrounding them.
- Increased ability to protect natural resources (e.g., vegetation, wildlife, cultural).

Federal, State, County, Tribal, and other Local Interest Cooperation

- Fuel breaks need to be continuous to function well, a fuel break is only as strong as its weakest point.
- This project presents opportunities for the BLM, U.S. Forest Service (USFS), State, County, Tribal, and private landowners to cooperate toward a common goal that benefits all interested parties.

1.4 Conformance with Land Use Plans

This proposal is in compliance with management direction established in the 1992 ROD for the Three Rivers RMP, specifically:

Fire management objective FM 1: "...as determined through values at risk analysis (Map FM-1), maximize the protection of life, property and high value sensitive resources from the detrimental effects of wildfire" (Three Rivers RMP/ROD, pg 2-102, Appendix B in this EA).

This proposal is in compliance with management direction established in the Record of Decision for the Three Rivers Resource Management Plan/Final Environmental Impact Statement (RMP/FEIS, Chapter 2, Fire Management Plan Decisions, August 1992), Greater Sage-Grouse and Sagebrush-Steppe Ecosystem Management Guidelines (2000), and BLM Manual 6840 policy (Bureau Special Status Species), and the Healthy Forests Restoration Act of 2003.

This PA is also in compliance with State, Tribal, and local regulations and policies.

1.5 Initial Scoping of Issues

Initial scoping of issues (EA OR-025-03-030 analysis file) was conducted with the USFS, the Harney County Court, Burns Paiute Tribe (through Scott Thomas, District Archaeologist for the Burns District BLM), Burns District BLM staff, and the local interested public when the County Court minutes (which included the PA) was read on KZZR, the local AM radio station.

1.6 Major Relevant Issues

- Wildlife habitat reduction.
- Effects on Special Status plant and animal populations.
- Noxious weeds establishment.
- Historical and cultural concerns.
- Riparian vegetation and water quality concerns.
- Concerns for major fires if the PA is not enacted.

CHAPTER 2: ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.1 Purpose of Chapter 2

Chapter 2 describes all alternatives (potential actions) thereby providing a framework for analysis.

2.2 List of Alternatives

2.2.1 No Action Alternative

Under this alternative none of the PAs described in Section 2.2.2 would be implemented.

2.2.2 Proposed Action Alternative/Preferred Alternative

The PA would optimize wildland fire suppression efforts and promote firefighter and public safety by reducing ladder fuels (thinning, limbing, and/or pruning) and overstocked understory from ponderosa pine (*Pinus ponderosa*), Douglas fir (*Pseudotsuga menziesii*), and grand fir (*Abies grandis*) stands within 100 feet of either side of the identified roads (Appendix A); reduce western juniper (*Juniperus occidentalis*) within 100 feet on either side of these identified roads; utilize hand piling, mechanical piling, fall burning of slash piles, and new or experimental technology for biomass reduction to reduce fuels within the same areas; brush beating Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*), mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*), and basin big sagebrush (*Artemisia tridentata* ssp. *tridentata*) on either side of the identified roads and trails where sagebrush is likely to be the primary fuel source carrying fire through the area.

Strategic Fuels Planning Unit (SFPU)/Proposed Treatment Mileage (see SFPU maps in Appendix A)

SFPU Unit Number	SFPU Unit Name	Total Miles
UNIT 01	POTATO HILLS	17.404
UNIT 02	SILVER CREEK	11.8716
UNIT 03	LONE PINE	42.9547
UNIT 04	POISON CREEK	30.674
UNIT 05	RATTLESNAKE	25.2201
UNIT 06	DREWSEY	39.94
UNIT 07	COTTONWOOD	14.2159
UNIT 08	NORTH WARM SPRINGS	49.6753
UNIT 09	SOUTH WARM SPRINGS	39.084
UNIT 10	BEAVER TABLES	0
UNIT 11	RIDDLE	24.7628
UNIT 12	DIAMOND CRATERS	0
UNIT 13	SILVIES VALLEY	12.8152
UNIT 14	CRANE-BUCHANAN	1.6072
Mileage Total		310.2248

Once established, these fuel breaks could require maintenance to remain effective against wildfire; repeat treatments could need to be applied in the same areas as fuel loads increase in order to maintain the integrity of the fuel breaks. Burns District specialists in coordination with District fuels planners would determine the need and frequency of any repeat treatments. This would be accomplished through, but not limited to, the establishment of permanent photo points to monitor vegetation response.

Project areas would require site-specific botanical and wildlife inventories done prior to implementation (archaeological inventories for this project have been completed); these can be accomplished year by year to coordinate with the project timeline (botanical clearance surveys have been completed for the Potato Hills and Lone Pine Units). Future application of fuels treatments on other than public lands identified in Appendix A would be required to be in compliance with the stipulations specified for WUI Community Assistance Grants (Appendix C).

In order to facilitate implementation of the proposed fuels treatments project design elements have been developed to provide guidance for treatments within varied vegetation communities that may be encountered in the course of project implementation. These project design elements may be of assistance in helping future proposed treatments on private land and other landownerships conform to the WUI Community Assistance Grants stipulations.

2.2.2.1 Project Design Elements

Although there may be some redundancy in the project design elements, this redundancy is useful in that it provides a layered safety net to further ensure minimization of any potential negative impacts. These design elements are substantially similar to those that may be needed for similar treatments on other landownerships. See Appendix D for a detailed list of the project design elements.

Much of the data used to design this project came from the Burns BLM Geographic Information System (GIS) theme layers. This excellent and very powerful technology does have some limitations with regard to this PA; specifically the resolution of the general vegetation and dominant vegetation theme layers. Interdisciplinary Team specialists have analyzed the site-specific effects of the PA based on these theme layers (and personal knowledge of the specific sites), but in order to provide greater control over the potential impacts the following project design elements would need to be adhered to. Additionally the unit layout must reflect the on-site vegetation so that the correct treatments are applied to the proper vegetation. Western juniper is the primary unrepresented plant species that may be present in many of the proposed project areas not identified as having juniper in the GIS vegetation layers. This will need to be treated appropriately. The intention of these project design elements is to allow for an increased site-specific application of the PA. In order to minimize any potential negative impacts to resources (such as wildlife habitat) the constraints in Appendix D are extremely important and would be adhered to.

2.3 Development of Alternatives/Alternatives Considered but Eliminated

The alternatives presented in Chapter 2 represent a range of reasonable alternatives. A third alternative was considered, but eliminated from detailed study; this third alternative proposed treating all of the identified strategic fuel break zone boundaries, regardless of the site-specific fuel loading conditions and resource concerns. This alternative was determined to be costly and unnecessary to help achieve the project goals and the goals and objectives contained in the Three Rivers RMP.

CHAPTER 3: AFFECTED ENVIRONMENT

3.1 Introduction

Chapter 3 is a description of the existing environmental conditions and management direction in the project area. Those resources that are deemed critical elements will be discussed first; followed by the noncritical elements. This chapter gives detail on the baseline condition of the project area and facilitates the comparison of the two alternatives.

3.2 Critical Elements

The following critical elements are not present or would not be affected by the PA or alternatives: Floodplains, wilderness, Wilderness Study Areas, environmental justice, farmlands (prime and unique), and hazardous materials. No known adverse effects would occur to energy development, production or distribution as a result of the PA. With regard to any Special Status species mentioned in this document; the proposed treatments would not trend any of the Special Status species toward listing.

3.2.1 Wetlands and Riparian Zones

This input is broken down by SFPU to enhance the site-specific nature of this document.

Potato Hills

The treatment area along Silver Creek is in a steep, narrow canyon that restricts the lateral migration of the creek. The riparian area is dominated by woody species that provide streambank stability and shade from solar heat input. The lowest portion of Nichol Creek is also in a steep narrow canyon dominated by woody species that provide the same benefits as they do for Silver Creek. The upper portion of Nichol Creek on BLM widens to a riparian meadow where herbaceous riparian vegetation dominates and woody vegetation is widely scattered.

In 1998, a Proper Functioning Condition (PFC) Assessment determined that the portion of Silver Creek affected by the PA was in proper functioning condition. A PFC Assessment was conducted on Nichol Creek in 1997 and it was determined that Nichol Creek was functional at-risk.

Silver Creek

A PFC Assessment has been completed on a portion of Egypt Creek that is within/adjacent to the proposed treatment area, and was determined to be functioning at-risk with an upward trend.

Lone Pine

Where the proposed fuel break intersects Skull Creek the riparian area is a sedge/rush/willow complex that is providing streambank stability and shade. In 1997 it was determined that the portion of Skull Creek crossed by the PA was in PFC.

Poison Creek

In 1997 it was determined that BLM-managed portions of Devine Creek were in PFC. Riparian zones and channel migration are limited by the location of Hwy 395 (in the bottom of the valley) and the naturally narrow canyon that Devine Creek flows through.

Rattlesnake

In 1997 a PFC Assessment determined that the portion of Rattlesnake Creek affected by the PA was in PFC.

Drewsey

The proposed fuels treatment located parallel to Bluebucket Creek contains riparian habitat. In 1998 the BLM-managed portions of Bluebucket Creek were determined to be in PFC, however, the stream reach paralleling the road is lacking in woody riparian species and late seral herbaceous riparian communities.

Cottonwood

No perennial streams are adjacent to or crossed by any of the proposed treatment areas within the Cottonwood Unit. The intermittent and perennial drainages near or within the treatment areas are not known to support wetland or riparian habitats.

North Warm Springs

There are seasonal wetlands in this unit which generally form from snowmelt in the spring. Riparian zones are limited to a few perennial streams, including Little Stinkingwater, Stinkingwater, Mahon, Clear Creeks, and scattered upland spring sites. PFC Assessments have been conducted on BLM portions of Clear, Mahon, and Stinkingwater Creeks. On Clear Creek, approximately 1.5 miles was determined to be in PFC, and 2 miles functioning at-risk (most with a downward trend). Stinkingwater Creek was determined to be in PFC for approximately 1.5 miles, functioning at-risk (upward trend) for 0.5-mile, and nonfunctioning for 0.5-mile. Mahon Creek was determined to be in PFC for approximately 2.25 miles, and functioning at-risk (upward trend) for approximately 0.5-mile.

South Warm Springs

Portions of Coleman Creek and Coyote Creek are within and adjacent to the proposed fuel treatment areas. In 1997 a PFC Assessment conducted on Coleman Creek determined that 4.6 miles of stream was in PFC and 0.3-mile was functional at-risk with an upward trend. A PFC Assessment was not conducted on Coyote Creek.

Beaver Tables

The proposed treatment area does not impact any of the following elements:

- Wetlands and Riparian Zones

Riddle

The proposed treatment area does not impact any of the following elements:

- Wetlands and Riparian Zones

3.2.2 Water Quality

This input is broken down by SFPU to enhance the site-specific nature of this document.

Potato Hills

Silver and Nichol Creeks are currently on the Oregon Department of Environmental Quality (ODEQ) 303(d) list for exceeding the 64 °F water temperature standard.

Silver Creek

Egypt Creek is currently on the ODEQ 303(d) list for exceeding the 64 °F water temperature standard.

Lone Pine

Skull Creek is currently on the ODEQ 303(d) list for exceeding the 64 °F water temperature standard.

Poison Creek

Devine Creek is not on the ODEQ 303(d) list.

Rattlesnake

Rattlesnake Creek is currently on the ODEQ 303(d) list for exceeding the 64 °F water temperature standard.

Drewsey

Water temperature data have been collected in Bluebucket Creek from 1997 to 2002. Water temperature in Bluebucket Creek exceeds the ODEQ water temperature standard of 64 °F for salmonid fish rearing during the summer months.

Cottonwood

No perennial streams are adjacent to or crossed by any of the proposed treatment areas within the Cottonwood Unit.

North Warm Springs

Stinkingwater Creek is currently on the ODEQ 303(d) list for exceeding the 64 °F water temperature standard. The proposed fuels treatment area crosses the upper reaches of Stinkingwater Creek. These reaches are generally dry and flow only in response to precipitation events and snowmelt.

South Warm Springs

The streams within or adjacent to the proposed fuel treatment areas are not on the 303(d) list.

Beaver Tables

The proposed treatment area does not impact any of the following elements:

- Water Quality

Riddle

The proposed treatment area does not impact any of the following elements:

- Water Quality

3.2.3 Air Quality

Most air masses move across the Three Rivers RA from west to east. Air moves into the area from Crook, Deschutes, and Lake Counties to the west and exits the District to the east entering Grant and Malheur Counties. Air quality is generally good in the northern part of Harney County. Isolated periods of poor air quality occur at two scales. Actions occurring on lands to the west of the RA can impact the air quality to some degree. At the local scale management actions occurring on the RA may also impact air quality. However, both effects are generally short lived. Wildfires pose the greatest potential negative impacts to air quality. Wildfires generally burn for longer periods of time and produce more smoke than prescribed fires. Prescribed fires are planned and implemented to occur during times when smoke will be transported to higher elevations and moved off to the east where it is diluted in the atmosphere.

3.2.4 Migratory Birds

Numerous species of migratory birds occur in the proposed project area. Swainson's hawks and ferruginous hawks nest in scattered juniper trees and hunt in surrounding habitats. Golden eagles and prairie falcons nest primarily in cliffs but several golden eagle nests occur in large ponderosa pine trees (these areas will be avoided as per the Project Design Elements in Appendix D). Long-billed curlews nest in grasslands usually within a mile of a water body. Flammulated owl, Lewis' woodpecker, Williamson's sapsucker, white-headed woodpecker, and pygmy nuthatch are species dependent on ponderosa pine for nesting and occur within the proposed project area. Loggerhead shrikes, burrowing owls, Brewer's sparrows, and sage sparrows nest in habitats with varying degrees of sagebrush density although burrowing owls will also use other habitats if burrows are present.

3.2.5 Threatened, Endangered, and Special Status Species

With regard to any Special Status species mentioned in this document; the proposed treatments would not trend any of the Special Status species toward listing.

3.2.5.1 Special Status Terrestrial Wildlife Species

The bald eagle, a Federally listed threatened species, occurs in the proposed project area. Two communal winter roost areas are within or adjacent to proposed treatment areas and are located in areas with small groups of large ponderosa pine.

The greater sage-grouse, ferruginous hawk, pygmy rabbit, northern goshawk, pileated woodpecker, northern pygmy owl, flammulated owl, white-headed woodpecker, black-backed woodpecker, three-toed woodpecker, pygmy nuthatch, and Columbia spotted frog are Special Status species that occur within the proposed project area. The Columbia spotted frog is associated with riparian habitat. The greater sage-grouse and pygmy rabbit are associated with sagebrush habitats and the ferruginous hawk nests mostly in scattered juniper trees and hunts in surrounding sagebrush habitats. The other species are dependent upon ponderosa pine for all or portions of their life cycle. With regard to any Special Status species mentioned in this document; the proposed treatments would not trend any of the Special Status species toward listing.

3.2.5.2 Special Status Plant Species

There are no known Federally listed T&E plant species in the project area, but numerous known Special Status plant sites exist within the project area and more sites may be discovered during project clearance surveys. With regard to any Special Status species mentioned in this document; the proposed treatments would not trend any of the Special Status species toward listing.

This input is provided by SFPU to enhance the site-specific nature of this document.

Potato Hills

Deschutes milkvetch occurs in this unit.

Silver Creek

Deschutes milkvetch, dwarf lousewort, and Cusick's buckwheat is known to occur in this unit.

Lone Pine

Dwarf lousewort, Deschutes milkvetch, and Raven's biscuitroot occur in this unit.

Poison Creek

Pinewoods cryptantha and short-lobed penstemon have been found in this unit.

Rattlesnake Creek

Raven's biscuitroot occurs in this unit.

Drewsey

Malheur prince's plume and Leiberg's clover are known to occur in this unit.

Cottonwood

Leafy pondweed and Leiberg's clover have been found in this unit.

North Warm Springs

Leiberg's clover, Malheur prince's plume, short-lobed penstemon, Biddle's lupine, and waterthread pondweed occur in this unit.

South Warm Springs

Biddle's lupine, short-lobed penstemon, Malheur prince's plume, Raven's biscuitroot, and *Carex cordillerana* have been found in this unit.

Riddle

Short-lobed penstemon, nodding melic, and snowball cactus occur in this unit.

Diamond Craters

Lowland rotala has been found in this unit.

Silvies Valley

Deschutes milkvetch, early sedge, and Raven's biscuitroot occur in this unit.

Crane

Back's sedge and Raven's biscuitroot have been found in this unit.

See Appendix E for scientific names and status of Special Status plants.

3.2.5.3 Special Status Fish Species

This input is provided by SFPU to enhance the site-specific nature of this document. With regard to any Special Status species mentioned in this document; the proposed treatments would not trend any of the Special Status species toward listing.

Potato Hills

The proposed fuels treatment area boundary follows Silver Creek and the Silver Creek Road to the junction with Nichol Creek where it then follows Nichol Creek upstream through BLM-managed, private, and USFS-managed lands. Silver Creek and Nichol Creek are known to have Great Basin redband trout (*Oncorhynchus mykiss*), a Bureau tracking species in Oregon and may have Malheur mottled sculpin (*Cottus bairdi*), a Bureau sensitive species in Oregon.

Silver Creek

The proposed fuels treatment area boundary follows Egypt Creek, on BLM-managed land for approximately 2 miles. Egypt Creek may contain Great Basin redband trout (*Oncorhynchus mykiss*), a Bureau tracking species in Oregon and Malheur mottled sculpin (*Cottus bairdi*), a Bureau sensitive species in Oregon. Both fish species are known to occur in Wickiup Creek.

Lone Pine

The proposed fuels treatment boundary area follows Skull Creek Road and crosses Skull Creek at one location. Skull Creek is known to have Great Basin redband trout (*Oncorhynchus mykiss*), a Bureau tracking species in Oregon and Malheur mottled sculpin (*Cottus bairdi*), a Bureau sensitive species in Oregon.

Poison Creek

The proposed fuels treatment area boundary follows Devine Creek and Hwy 395 for approximately 4 miles. Devine Creek is known to have Great Basin redband trout (*Oncorhynchus mykiss*), a Bureau tracking species in Oregon and Malheur mottled sculpin (*Cottus bairdi*), a Bureau sensitive species in Oregon.

Rattlesnake

A proposed fuels treatment area boundary follows Rattlesnake Creek and the Rattlesnake Creek Road. Rattlesnake Creek is known to have Great Basin redband trout (*Oncorhynchus mykiss*), a Bureau tracking species in Oregon, and Malheur mottled sculpin (*Cottus bairdi*), a Bureau sensitive species in Oregon.

Drewsey

Part of the proposed fuels treatment area in the Drewsey Unit is located along the FS 14 Road, adjacent to a segment of Bluebucket Creek and the mouth of Cougar Creek (tributary to Bluebucket Creek). Bluebucket Creek is known to have Great Basin redband trout (*Oncorhynchus mykiss*), a Bureau tracking species in Oregon. In addition, Bluebucket Creek is a tributary of the Malheur River, which contains bull trout, Federally listed as threatened under the Endangered Species Act. An electrofishing survey in 2000 on Bluebucket Creek found no bull trout, however, the stream is accessible to bull trout. The Malheur River from Warm Springs Dam upstream to its headwaters is currently proposed as designated critical habitat for bull trout. Bluebucket Creek, though not included in the critical habitat proposal, is a tributary of the segment of the Malheur River that is proposed.

Cottonwood

No perennial streams are adjacent to or crossed by any of the proposed treatment areas within the Cottonwood Unit, therefore, fish are not present.

North Warm Springs

Great Basin redband trout (*Oncorhynchus mykiss*), a Bureau tracking species in Oregon is found in Stinkingwater Creek, which is within the North Warm Springs Unit. The fish are located downstream of the proposed fuel treatment area. The treatment areas cross mostly ephemeral channels that are not known to support Special Status fish species.

South Warm Springs

Portions of Coleman Creek and Coyote Creek are within and adjacent to the proposed fuel treatment areas. Great Basin redband trout (*Oncorhynchus mykiss*), a Bureau tracking species in Oregon, are found in Coleman Creek. Coyote Creek is an intermittent stream and is not known to contain fish.

Beaver Tables

The proposed treatment areas within the Beaver Tables SFPU would not impact Special Status fish.

Riddle

The proposed treatment areas within the Riddle SFPU would not impact Special Status fish.

3.2.6 Cultural/Historical Resources

Cultural resource identification efforts completed within the Fuel Breaks planning area over the past 20 years include numerous pedestrian surveys, literature reviews, and consultation with American Indian tribes and other stakeholders historically associated with the area. Past identification efforts have identified many precontact and historic era archaeological sites; as well as paleontological resources in the RA. Site types that have been identified include surface lithic scatters, lithic scatters with subsurface components, stacked rock features, rock art, culturally scarred trees, built resources, structural ruins, scatters of historic debris, miscellaneous archaeological features, and paleontological resource sites.

A pedestrian sample survey was conducted in support of the Strategic Fuel Breaks project during the field season of 2003. This inventory accounted for the survey of approximately 1,700 acres within the planning area and identified 25 archaeological sites that are potentially eligible for inclusion to the National Register of Historic Places (NRHP). The Strategic Fuel Breaks cultural resource inventory targeted landforms that are of low or gradual topographic relief (slope of < 20 percent) and which support overstory vegetation that is to be treated mechanically by the PA. Roadside areas that are to be brushbeaten only were not surveyed for cultural resources since the potential for site disturbance by this treatment is considered to be negligible to low.

SFPU	Acres Surveyed	NRHP Eligible Properties
Potato Hills	116	4
Silver Creek	39	0
Lone Pine	332	14
Poison Creek	242	6
Rattlesnake	150	3
Drewsey	174	3
Cottonwood	50	1
North Warm Springs	182	3
South Warm Springs	29	0
Beaver Tables	0	0
Riddle	95	0
Diamond Craters	0	0
Silvies Valley	124	10
Crane Buchanan	175	2
TOTAL	1,708	46

3.2.7 Noxious Weeds

In general, the major road networks (State Highways and County Roads) proposed for treatment as fuel breaks have noxious weed infestations along them. The roads are the primary sources for new weed introduction and spread.

Broad noxious weed issues specific to each SFPU are listed below:

1. **Potato Hills** – Russian and spotted knapweed are the biggest issues in this zone. Most of the larger infestations occur on private lands but public land also has infestations in this area. This area has had little systematic inventory, but observations show relatively few noxious weed infestations.
2. **Silver Creek** - Small infestations of Russian, spotted, and diffuse knapweed occur in this zone as well as Dalmatian toadflax, various thistles, whitetop, and perennial pepperweed. There are infestations on private, BLM, and USFS lands. Medusahead rye is becoming more and more prevalent in this area and is spreading rapidly.
3. **Lone Pine** - Dalmatian toadflax, whitetop, perennial pepperweed, diffuse and Russian knapweed are the biggest weed issues in this zone. There are some large infestations on both public and private lands. The river bottoms are particularly problematic.
4. **Poison Creek** – Dalmatian toadflax and perennial pepperweed are the biggest weed issues in this zone. There are infestations on both public and private lands.
5. **Rattlesnake** - Dalmatian toadflax, whitetop, and perennial pepperweed are the biggest weed issues in this zone. There are infestations on both public and private lands.
6. **Drewsey** - Whitetop, scotch thistle, bull thistle, Mediterranean sage, and medusahead rye are the most significant problems in this zone. Diffuse knapweed, black henbane, perennial pepperweed, and St. Johnswort are also present and somewhat problematic. There are significant infestations on both public and private lands.
7. **Cottonwood** – Scotch thistle, medusahead rye, and whitetop are the most significant problems in this zone.
8. **North Warm Springs** – Medusahead rye, whitetop, and Scotch thistle are the problems in this zone. There are very large-scale infestations of all three species with medusahead rye being the most widespread on both public and private lands. Small infestations of perennial pepperweed, bull thistle, and black henbane are also present.
9. **South Warm Springs** – Medusahead rye and perennial pepperweed pose problems in this zone. Russian knapweed, Scotch thistle, and whitetop are also present and have been problematic at times, particularly on the major roads. There are infestations on both public and private lands.
10. **Beaver Tables** – Diffuse knapweed and medusahead rye occur in relatively large infestations, primarily on public land. Whitetop, Russian knapweed, and various thistles are also present in small patches.

11. **Riddle** - Perennial pepperweed and medusahead rye occur in large acreage infestations in this zone. Whitetop and Russian knapweed also occur in small patches. There is a known tansy ragwort site on private land in this zone. There are infestations on both public and private lands.
12. **Diamond Craters** - Perennial pepperweed is the problem weed in this zone. It occurs in infestations on private and public land.
13. **Silvies Valley** – Houndstongue, diffuse knapweed, bull and Canada thistle are the most extensive infestations in this zone. They occur in many small to moderate sized infestations on public and private lands. Dalmatian toadflax, Russian knapweed, and whitetop also occur in small patches.
14. **Crane-Buchanan** - Russian knapweed, whitetop, and bull thistle occur in small patches in this zone. They are not particularly prevalent.

3.2.8 Areas of Critical Environmental Concern

Biscuitroot Cultural Area of Critical Environmental Concern (ACEC):

The ACEC supports open stiff sagebrush/bunchgrass and low sagebrush/bunchgrass vegetation communities with scattered juniper groves and several culturally valuable root plants that occur within these plant communities. These sites and the specific plants species are important to American Indian traditionalists.

The Biscuitroot Cultural ACEC is 6,500 acres in size and located 27 miles east of Burns, Oregon. It includes two associated parcels, both of which are transected by Highway 20. These two parcels, 2,170 and 4,330 acres respectively, are in the vicinity of Stinkingwater Pass and are primarily oriented north-south, following major ridgelines in the Stinkingwater Mountains. The elevation of the ACEC ranges from 4,280 to 4,995 feet. Access is via high standard gravel roads and unimproved dirt roads linked to County and State road systems.

The general location of the ACEC is on a plateau northeast of Harney Valley. This locality is a fault block mountain near the juncture of three major physiographic provinces; the Blue Mountains, Owyhee Uplands, and Basin and Range. The plateau is characterized by basalt flows, rimrock, gentle to steeply sloping uplands, and scablands with bare rock or a thin soil mantle.

Soils in the ACEC are generally shallow, well-drained loams and clayey loams that are stony, frigid, and xeric. The Stinkingwater fault block forms a divide with runoff to the west draining into the Harney Basin and other waters flowing into the Malheur River system. Generally, the ACEC has little surface water available other than from a few ephemeral drainages such as Little Pine Creek, McMullen Creek, and other unnamed seasonal streams. Several springs are found on sloping rocky uplands above Little Pine Creek.

Kiger Mustang ACEC:

The Kiger Mustang ACEC is 64,639 acres in size and is made up of the Kiger and Riddle Mountains Herd Management Areas (HMAs). There are 36,618 acres in the Kiger HMA and 28,021 acres in the Riddle Mountain HMA. The primary management objective for the ACEC is to perpetuate and protect the dun factor color and conformation characteristics of the wild horses in the HMAs.

The Kiger HMA is located approximately 45 air miles southeast of Burns, Oregon, and 2 miles east of the small town of Diamond. The area is gently rolling with occasional rock rims with elevations ranging from 4,200 to 6,800 feet. Some of the area is open flats while others are dominated by scattered to thick western juniper cover that has an understory of sagebrush and bunchgrass. Soils generally are shallow clay loam and moderate to deep clay loams that are stony xeric/aridic and frigid.

The Riddle Mountain HMA is located approximately 50 air miles southeast of Burns, Oregon, and is southeast and adjacent to Riddle Mountain. Topography varies from gently rolling hills to steep slopes and buttes with broad valleys, with elevations ranging from 4,300 to 6,800 feet. The area is dominated by a big sagebrush/bunchgrass vegetation type with playa lakebeds and areas of western juniper and aspen. Soils generally are shallow clay loam and moderate to deep clay loams that are stony xeric/aridic and frigid.

3.3 Noncritical Elements

There are no current realty issues to describe with regard to this PA. These resources will not be discussed further in the EA.

3.3.1 Soils

There are 10 general soil types (Appendix F) found within the project area. These general soil types (Map S-1 General Soils, Pg. 2-17 Three Rivers RMP/ROD) are:

1. Aquic Frigid and Cryic soils of basins and valleys.
2. Xeric Frigid soils on forested mountains and plateaus.
3. Xeric Frigid soils on grass-shrub uplands.
4. Xeric/Aridic Mesic soils on terraces and uplands.
5. Xeric/Aridic Mesic soils on grass-shrub uplands.
6. Xeric/Aridic Frigid soils on grass-shrub uplands.
7. Aridic/Xeric Frigid soils on terraces and in basins.
8. Aridic/Xeric Frigid soils on plateaus and uplands.
9. Lava flows.
10. Xeric Frigid soils on terraces and uplands.

Soil types 1, 7, and 8 occur less frequently in this project area (Map S-1 General Soils, Pg. 2-17 Three Rivers RMP/ROD).

3.3.2 Vegetation

The Three Rivers RA has five major vegetation types dominating the project area; these general vegetation types are:

1. Wyoming Big Sagebrush/Perennial Grassland – 801,535 acres.
2. Low Sagebrush/Grassland – 467,805 acres.
3. Mountain Big Sagebrush/Grassland – 198,059 acres.
4. Juniper/Big Sagebrush – 173,772 acres.
5. Big Sagebrush/Annual Grassland – 111,961 acres.

Lesser represented vegetation types include Juniper/Low Sagebrush (90,685 acres), Crested Wheatgrass (66,484 acres), Big Sagebrush/Crested Wheatgrass (63,309 acres), Stiff Sagebrush (52,166 acres), Forested (44,578 acres), Native Perennial Grassland (41,373 acres), Salt Desert Shrub/Grassland (36,894 acres), and Rabbitbrush/Grassland (22,805 acres).

Minor vegetation types include Silver Sagebrush/Grassland (16,535 acres), Annual Grassland (15,967 acres), Mountain Shrub/Grassland (7,870 acres), and Quaking Aspen (2,743 acres).

3.3.3 Wildlife

Numerous species of wildlife common to the dry ponderosa pine, juniper woodland, and sagebrush steppe habitat types of eastern Oregon, in addition to those listed in the SS-species section; occur within the proposed project area. Some of these are mule deer; pronghorn antelope; Rocky Mountain elk; deer mouse; coyote; brown-headed cowbird; American robin; sagebrush lizard; short-horned lizard, and western rattlesnake.

3.3.4 Livestock Grazing Management

Within the proposed project areas there are 124 permittees grazing on 200 allotments. The season of use within these allotments is primarily April 1 to October 31, with a few instances of winter season grazing. Livestock forage allocated on these allotments amounts to approximately 100,000 Animal Unit Months. This forage represents anywhere from 10 to 70 percent of permittees annual livestock forage needs. There are numerous types of range improvements in the project area including, but not limited to, fences, spring developments, reservoirs, wells, guzzlers, and juniper cuttings. While there are approximately 66,000 acres of crested wheatgrass seedings within the project area, most of the area is comprised of perennial, native vegetation.

3.3.5 Recreation

Since the majority of the strategic fuel breaks will be located adjacent to travel corridors such as gravel roads, and two tracked roads, the primary recreation activity in the proposed project area is driving in pursuit of a recreation opportunity. Driving will be associated with a variety of recreation opportunities including hunting for big game species such as elk, deer, and antelope, hunting for upland game birds; fishing, camping, hiking, picnicking, sightseeing, wildlife viewing, and more.

3.3.6 Visual Resource Management

Visual Resources in the Three Rivers RA are comprised of a mosaic of Visual Resource Management (VRM) Classes II, III, and IV (Map VRM-1, pg. 2-151, Three Rivers RMP/ROD). The vast majority of the proposed project area is comprised of Class III (partial retention of the landscape character) and Class IV (modification of the landscape character). See Appendix G. The VRM Class III objective is to partially retain the existing character of the landscape. The level of change to the landscape should be moderate. Management activities may attract attention to the casual observer, however, should not dominate the landscape.

VRM Class IV objective allows major modification to the landscape, with management activities dominating the view shed and being the major focus of the observer.

3.3.7 Economic and Social

The primary economic base for Harney County is livestock and hay/alfalfa production. Secondary economic and social uses of the area include tourism and big game/upland bird hunting.

3.3.8 Fire Management

The area under consideration is a mosaic of multiple plant communities greatly affected by soils and topography. Higher elevation areas are dominated by ponderosa pine and isolated pockets of Douglas fir. Most of the forested areas would be placed in Fire Regime I (1 to 35-year frequency, low intensity fires) Condition Class II or III (areas have missed two or more fire events). Lower elevation areas are dominated by sagebrush. These areas would be placed in Fire Regime IV (35 to 100-year frequency, stand replacing) and Condition Class II or III. Between these two zones are plant communities dominated by mountain big sagebrush and/or western juniper. Most areas dominated by western juniper were once mountain big sagebrush plant communities. These areas would be placed in Fire Regime II (1 to 35-year frequency, stand replacing) and Condition Class II or III. The lack of fire is one of the main causal factors to the western juniper increase across the area. Fuels in these area are continuous and only broken by shallow soil areas, humanmade structures (i.e., roads), or canyons and ridges. The fuel continuity increases the risk of very large fires. The reduction in the frequency of fire across the area has also permitted the fuels to accumulate above historic levels. Fire suppression actions taken on larger fires utilize indirect attacks. This is due to the fuel accumulation and flame lengths generated by the fuels. Most of the project area falls within Fire Management Zone C (full suppression and prescribed burning); wildland fires would suppressed regardless of ignition source.

3.3.9 Wild Horses

There are three HMAs within the Strategic Fuel Breaks project area. The Kiger HMA is 36,618 acres which is located in the Riddle SFPU (as well as the Kiger Mustang ACEC), Riddle Mountain HMA is 28,021 acres is also located in the Riddle SFPU. The Stinkingwater HMA is 79,631 acres which is located in the South Warm Springs SFPU, North Warm Springs SFPU and the Crane–Buchanan SFPU (Appendix H).

Each HMA is managed according to a Herd Management Plan which identifies the population of horses to be managed for and the objectives for managing the herd including the physical characteristics of the horses. The horse population is controlled by periodic gathers and adoptions conducted by the BLM (Appendix H).

CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

4.1 Proposed Action: Critical Elements

4.1.1 Wetlands and Riparian Zones

The proposed project design includes reducing treatments in riparian areas; therefore, direct impacts to riparian areas are not anticipated. Large-scale, high intensity wildfires are more likely to burn through riparian areas than smaller scale low intensity wildfires; the PA is expected to reduce the scale and intensity of wildfires, therefore, providing an indirect beneficial impact.

Riparian areas have been negatively impacted by human activities and natural events throughout the Three Rivers RA, including those within the proposed treatment units. The PA may reduce scale and intensity of wildfires and thus benefit riparian vegetation by reducing the likelihood of fire burning through riparian areas.

4.1.2 Water Quality

Careful project design has allowed for avoidance of the vast majority of the riparian areas. This would be standard operating procedure in this project. Retaining riparian vegetation will maintain shading of streams and provide a filter to trap sediment in runoff before it reaches the stream. Therefore, no increase in water temperature or sediment input to stream channels is expected to occur as a direct effect of implementing the PA. Large-scale, high intensity wildfires are more likely to burn through riparian areas than low intensity fires. This would remove shading over stream channels and increase sediment input to streams due to lack of a riparian filter and increased soil movement from uplands, causing water quality degradation. The PA is expected to reduce the scale and intensity of wildfires, which may result in an indirect beneficial impact to water quality.

4.1.3 Air Quality

The PA would produce some smoke from prescribed fires and dust from mechanical treatment of the fuels. However, these impacts would be short lived. Prescribed fire actions would be planned for periods of time when smoke would be elevated, transported, and diluted in the atmosphere. Smoke production from prescribed fires will also be minor and transitory as slash piles are the only item proposed to be burned in the PA. Dust production from mechanical actions would be site-specific and localized to within a few miles.

The proposed project could increase the number of acres treated, but would have minimal impacts on air quality. Air quality entering the area from the west may be impacted by fuels treatments conducted by neighboring USFS and BLM units. These impacts would be transitory and coordination with neighboring units will reduce the negative impacts.

4.1.4 Migratory Birds

Treatment of approximately 3,000 acres of sagebrush and juniper habitat could affect loggerhead shrikes, Brewer's sparrows, sage sparrows, and burrowing owls. Loggerhead shrikes and Brewer's sparrows have experienced declines in the Great Basin Bird Conservation Region while sage sparrows may have experienced an increase and burrowing owls have increased. Species that prefer grasslands such as vesper sparrows and Western meadowlarks may be beneficially affected. Both of these species are stable in the Great Basin Bird Conservation Region.

Disturbance to migratory birds could be similar to that experienced by Special Status species (Section 4.1.5.2).

During the spring, brush beating can impact individual birds nesting in the activity areas. Use of one tractor for 1-month in the spring would affect a minimal amount of the total project area habitat for these birds. Implementation of the proposed brush beating, including spring brush beating is likely to benefit the same migratory bird species in the long term.

In the long term (>5 years), it is likely that many species of migratory birds would benefit from the retention of Wyoming big sagebrush habitat and/or the slightly increased diversity of sagebrush age classes the brush beating would provide. In the short term (<5 years), there could be displacement of a few individual migratory birds that utilize the proposed roadside margin brush beating areas. There would be a decrease in habitat in the brush-beat area for the species that prefer sagebrush such as sage sparrow, Brewer's sparrow, and sage thrasher. There would be an increase in habitat in the brush-beat area for the species that prefer a more open habitat such as horned lark, Western meadowlark, and vesper sparrow.

Off site beneficial impacts to loggerhead shrike, Brewer's sparrow, and sage sparrow habitat could occur if fires are smaller and less intense as a result of implementation of the PA. The degree of beneficial impact would be proportional with the reduced size of the fires.

4.1.5 Threatened, Endangered, and Special Status Species

With regard to any Special Status species mentioned in this document; the proposed treatments would not trend any of the Special Status species toward listing.

4.1.5.1 Special Status Terrestrial Wildlife Species

There would be no known effect to bald eagles, Columbia spotted frogs or pygmy rabbits or their habitat as a result of implementation of the PA.

Approximately 1,500 acres of greater sage-grouse yearlong range would be converted from sagebrush habitat to grassland habitat. Much of this habitat is currently in poor condition due to its proximity to roads and overhead lines. The 1,500 acres represents less than one-half of 1-percent of known greater sage-grouse yearlong range in the Burns District.

If high intensity fires become less frequent or smaller because of implementation of the PA, greater sage-grouse habitat would be positively impacted. The degree of beneficial impact would be proportional to the reduced size of the fires.

4.1.5.2 Special Status Plant Species

This alternative could benefit plants that could be negatively impacted by intensive wildfire. Fuel breaks also can reduce the likelihood of large-scale noxious weed infestations in Special Status plant sites if wildfires are successfully stopped by the fuel breaks.

Care would need to be taken to not pile and burn slash within known Special Status plant sites. Additionally mechanical disturbance may positively or negatively impact plant species; this is species dependent and is addressed in the mitigation measures (Appendix D).

The influence of western juniper is widespread in the Burns District and any reduction of this influence would likely have beneficial elements with regard to Special Status plants. Juniper reduction releases the understory vegetation; this release would reintroduce the components that once helped maintain balance with natural fire regimes (minus modern day excessive fuel loading). Juniper encroachment can have very negative impacts on plant populations that can not compete with this very competitive plant species. Reducing this influence would likely be beneficial for Special Status plant populations currently being encroached upon.

Project areas will need to have botanical clearance surveys complete done prior to project implementation, these can be phased in year by year to coordinate with the project timeline. With careful flagging and project implementation, the PAs would have minimal negative effects.

Reduced size and intensity of wildland fires would likely benefit plant populations by limiting the potential for catastrophic reductions in plant population size and the resulting genetic bottleneck that could be an insurmountable obstacle to natural recovery.

4.1.5.3 Special Status Fish Species

This alternative is not expected to directly impact bull trout, Great Basin redband trout, Malheur mottled sculpin, or any other aquatic species. The proposed project design includes minimizing treatments in riparian areas. Retaining riparian vegetation would maintain shading of streams and provide a filter to trap sediment in runoff before it reaches the stream. Therefore, implementing the PA is not expected to increase water temperature or sediment input into streams. Large-scale, high intensity wildfires are likely to burn through riparian areas, which would remove shading over stream channels and increase sediment input to streams, causing degradation of aquatic habitat. The PA is expected to reduce the scale and intensity of wildfires, which may result in an indirect beneficial impact on bull trout, redband trout, Malheur mottled sculpin, and other aquatic species.

Aquatic habitat has been negatively impacted by both human activities and natural events, and many streams within the Three Rivers RA, including the proposed treatment units, have been placed on the ODEQ 303(d) list for exceeding State water temperature standards for cold water fish rearing. Though the PA may reduce scale and intensity of wildfires and thus reduce negative impacts to aquatic habitat and species populations on a small scale, it is unlikely that the PA would either positively or negatively impact the overall viability of bull trout, Great Basin redband trout, Malheur mottled sculpin, or any other aquatic species.

4.1.6 Cultural/Historical Resources

A project is considered to have an adverse effect on an historic property when it results in the alteration of characteristics that qualify the property for the NRHP. A large majority of the properties that have been identified within the Strategic Fuel Breaks planning units are eligible for the NRHP on the basis of their ability to yield scientific information that is important to studies of prehistory or history. Therefore, activities that substantially modify the patterning of surface or buried archaeological deposits are considered to result in an adverse effect. Project effects that enhance site stability and the potential effects of a no action alternative are also discussed.

The Strategic Fuels Breaks Area of Potential Effect (APE) for cultural elements of the environment is restricted to the area that is within the perimeter of the planning area. That is to say, the effects of potential activities on Cultural Resource Properties (CRPs) situated outside of the Fuels Breaks treatment corridors are not analyzed. Based on data collected from the District to this point, the activities that are being planned under this analysis do not have the potential to directly or indirectly alter social, visual, auditory, or biophysical aspects of CRPs that are located external to the planning area.

The roadside brush beating of sagebrush species in the planning units will not result in an damage to CRPs with archaeological value. The rubber-tired tractor used to mow the vegetation 6 to 14 inches above the ground typically results in minimal to negligible ground disturbance. Indirectly, establishment of defensible space would allow for more effective fire suppression and improved protection of fire sensitive CRPs.

Heavy tracked equipment, such as dozers and skidders, could disturb the patterning of archaeological deposits located at or near the surface of the ground. Therefore, rubber-tired tractors, vehicles, and equipment would be preferred to operate within the boundaries of sites with archaeological value. Obsidian dominated lithic scatters situated at or near the surface of the ground can sustain adverse effects from extreme heat as slash piles or concentrations of large wood are burned in their immediate vicinity. This adverse effect would be avoided by not allowing the construction of machine or handpiles of large diameter slash to be constructed upon or adjacent to lithic oriented archaeological properties. Archaeological sites in the RA would realize long-term benefits as the scale and intensity of future wildfire events are reduced.

American Indian traditional use areas such as the Biscuitroot ACEC would not be damaged under the PA. Stands of cultural plants in the RA could realize an indirect positive effect as the risk of a large-scale stand-replacement wildfire is reduced.

Paleontological localities would not be subject to impacts related to the proposed fuels treatments.

4.1.7 Noxious Weeds

There is potential for increased spread of noxious weeds due to the proposed fuel break management actions along roads given the number of infestations. Increased disturbances would create more potential seedbeds for noxious weed introductions. Timing of actions could exacerbate spread if weeds have gone to seed. Weed-seed infested equipment could increase weed introductions.

The creation of fuel breaks would ultimately be beneficial where noxious weeds are concerned because many noxious weed species, particularly medusahead rye, Dalmatian toadflax, and the biennial thistles are particularly prone to taking advantage of the new seedbed opportunities opened up by fire disturbance.

4.1.8 Areas of Critical Environmental Concern

Biscuitroot ACEC

The Biscuitroot ACEC and other American Indian root gathering areas in Three Rivers RA have two physical components that are differently affected by land management. The first component is the actual edible root habitat, usually shallow lithosols with cobbly to gravelly surface sediments. These lithosol environments are generally considered fire resistant and the target species (*Lomatium* sp. and *Lewesia rediviva*) are usually dormant when natural or prescribed fire occurs. The second component is the traditionally used (prehistoric and historic) camping and root processing sites adjacent to root gathering areas. These sites are usually located within juniper/sagebrush plant communities and are highly susceptible to fire. Because these two basic components are dramatically different in their response to wildland fire, they will be analyzed separately.

1. Edible root habitat is not likely to be greatly affected by wildland fire because this vegetation community is fire-resistant and most edible roots are dormant when fire is most likely to occur. This habitat can be directly affected by ground-disturbing activities such as mechanical slash piling. Because slash piling is not expected to occur within this vegetation community, ground-disturbing activity would be minimal with the creation of fuel breaks. Care must be taken to avoid using lithosols as piling areas and fuel break-associated OHV travel should be avoided in root gathering areas generally and is prohibited within the Biscuitroot ACEC.
2. Camping and root processing sites are very likely to be affected by wildland fire. Noncommercial understory thinning of coniferous trees and overstory reduction of western juniper within or adjacent to camping areas can increase potential fire effects by increasing fuel loading. Reduction of this fuel loading by slash disposal ameliorates this affect on camping areas. However, any kind of vegetation management of this scale within or near to camping areas will render the camping areas unusable. These management activities are seen by American Indian users as intrusive and will lead to abandonment of not only the camp areas but also the nearby edible root habitat. The issue is aesthetic/visual/spiritual and cannot be easily mitigated except through complete avoidance of the area.

A case in point is the Little Pine Creek gravel pit area within the ACEC. This area is a premier part of the ACEC in terms of richness of root habitat, location of several root camps, and season water for washing roots. This area has been nearly abandoned since the Little Pine Creek gravel pit was dug. The pit is abandoned, the storage has been reclaimed but still the root gatherers avoid the area.

If fuel breaks were designed so that they would protect sites while not affecting the aesthetic/visual/spiritual qualities of those locations, they would decrease the likelihood and, therefore affects, of wildland fire.

According to the Biscuitroot ACEC Management Plan removal of special forest products such as firewood and juniper boughs is prohibited within the ACEC campsites. Obviously understory thinning of coniferous trees and overstory reduction of western juniper would be included in this prohibition. Campsites within non-ACEC root gathering areas would be inventoried prior to any vegetative management in order to avoid these areas when fuel breaks would be created.

In summary, the PA would likely result in minimal affects to edible plant communities and maximal affects to camp and root processing sites. Of course, if the camping and root processing sites are exposed to wildland fires there is potential for affects through destruction of the juniper overstory and shrub understory.

Kiger Mustang ACEC:

The project would benefit the ACEC by maintaining the habitat and reducing the short and long-term impacts of wildland fires. The short and long-term quantity and year-round forage quality is reduced for wild horses in the ACEC when wildfires occur. Any reduction in the size of future wildfires would benefit the primary management objective for the ACEC.

Due to the size of the ACEC in relation to the treatment areas, horses would avoid these areas while treatment was being completed. There would be no long-term effects on the ACEC from the PA.

4.2 Proposed Action: Noncritical Elements

4.2.1 Soils

Brush beating is generally not ground-disturbing. Water saturated areas would be avoided to keep the equipment from becoming stuck. There would be no measurable impacts to the soil resource from the brush beating components of the alternative. Brush beating would likely benefit soils in the long term by limiting the size of wildfires and therefore minimizing wind and water erosion events.

Soil disturbance and compaction may occur due to mechanical thinning operations, but cumulative effects would be minimal in the long term, especially if the fuel breaks are successful in reducing fire size and/or intensity. Establishment of occasional mineral soil interspaces actually could provide a greater variation of potential plant habitat.

Prevention of large-scale wildfires could prevent large-scale erosion events if the PA is enacted and successful in its goals.

4.2.2 Vegetation

This alternative would likely benefit plant communities that could be negatively impacted by wildfire. Fuel breaks also may reduce the likelihood of large-scale noxious weed infestations in Wyoming sagebrush and other susceptible plant communities if wildfires are successfully stopped by the proposed fuel breaks. The minor incursion into the plant communities affected by these methods would also slightly increase age class diversity in many parts of the project area. As the project only affects roadside vegetation or natural and artificial corridors through plant communities, the impact on adjacent plant communities from fuel break establishment alone would be negligible.

4.2.3 Wildlife

Large-scale loss of wildlife habitat could be prevented or reduced as a result of this PA if wildfire suppression efforts are successful in concert with the proposed fuels treatments.

Security cover for wildlife species along the roads and highways proposed for treatment would be partially reduced. The improved visibility of big game species near these roads could result in increased illegal activity in the form of hunting from vehicles and nighttime spotlighting.

The proposed project could temporarily affect species such as sagebrush lizard, sagebrush vole, and Townsend's solitaire that depend on sagebrush and juniper habitat for portions of their life cycle, but the areas of proposed treatments are at a maximum 100 feet wide for overstory and understory fuels reduction treatments and do not impact the adjacent similar habitat. Species that prefer grassland habitat such as deer mouse and horned lark may benefit from implementation of the PA.

Off site benefits to species that require shrub/steppe and ponderosa pine habitat will be realized if fires are smaller due to implementation of the PA. The degree of benefit will be proportional to the decrease in the size of fires.

4.2.4 Livestock Grazing Management

The PAs would not displace any permittees or reduce access to or availability of livestock forage. Forage availability would likely increase slightly as brush and trees are removed and forage species are exposed. If slash piles are reseeded after burning, livestock may be drawn to these areas, especially if highly palatable species are used. Since many of the fuel breaks are located on ridges there is a slight, but increased probability that livestock distribution would improve.

4.2.5 Recreation

Hunting opportunities could be increased as a result of implementation of the PA; illegal hunting could be increased as well in limited portions of the project area with reduced wildlife cover. Driving for pleasure could be enhanced by the potential for increased viewing of large game near treatment areas; conversely, some of the larger game species such as elk may avoid the areas with reduced cover. The risk of vehicular collision with large wildlife species is a constant existing risk factor in many parts of the project area; enactment of this PA could increase or decrease this to a limited extent.

If the PA is successful retention of the landscape on a large scale will benefit a variety of recreation opportunities such as driving for pleasure, wildlife viewing, photography, and more. Treatment areas may provide increased forage such as grasses and forbs benefiting wildlife species dependent on this type of habitat. Hunting opportunities for big game species such as deer, elk, antelope, along with upland game birds may increase within these treatment areas.

Areas popular for camping along these corridors would have an increased potential of being protected from large-scale wildland fires. These areas are usually located within areas that provide shade and/or water for the public.

4.2.6 Visual Resource Management

Limited impacts to visual resources may occur as a result of this PA; however, the potential prevention of loss of large portions of the scenic landscape would likely occur if the fuel breaks are successful in assisting fire suppression efforts. Fuels reduction efforts would be restricted by VRM class as appropriate. The type of treatment to the project area will be widening existing travel routes adding a liner expansion adjacent to the roads and ways. A short-term impact will occur until forbs and grasses have a chance to reestablish themselves. Areas that are thinned will also have some short-term impacts to the landscape, however, these areas will recover quickly with grasses and forbs with exposed sunlight and slash piles being burned.

A major benefit to the proposed project is that the protection of large landscape areas from catastrophic wildfires, being dominated by cheatgrass and other noxious weeds, thus improving and maintaining the visual quality of the area.

4.2.7 Economic and Social

This alternative would likely be beneficial to the local public and economy as a result of increased contractor activity in the County. Retention of landscape from wildfire impacts (regardless of ownership) would provide for economic and social stability and peace of mind from increased public and firefighter safety. Additionally, projects of this type demonstrate a proactive approach to firefighter, public and resource safety and contribute to better relations and communication with local interests and the general public.

4.2.8 Fire Management

The PA would reduce fuels in specified locations to aid suppression actions. Management actions taken would reduce the fuel loading and help facilitate direct attack on the fire. Fire could be held within the strategic fuel break area and reduce overall fire size. Firefighter and public safety would be increased and the risks to private lands mixed in with Federal lands would be reduced. The lower fireline intensity would help to increase survivability of plants. Less effort would be needed to stabilize and rehabilitate the site following wildfire.

4.2.9 Wild Horses

The project would benefit wild horses by maintaining their habitat and reducing the short and long-term impacts of wildland fires that occur in the herd areas. The short and long-term quantity and year-round forage quality is reduced for wild horses when wildfires occur. Any reduction in the size of future wildfires in the herd areas would benefit wild horses. The viability of wild horse herds is dependent on the health and productivity of their habitat.

There would be temporary disturbance of normal grazing and trailing in the immediate vicinity of the treatment areas while brush beating or burning is taking place. Due to the size of the HMAs in relation to the treatment areas, horses would avoid these areas while treatment was being completed. There would be no long-term effects on wild horses from this PA.

4.3 No Action Alternative: Critical Elements

4.3.1 Wetlands and Riparian Zones

There would be no direct impact to riparian areas under the no action alternative. Large-scale, high intensity wildland fires are more likely to burn through riparian areas than low intensity wildfires. If fire intensity and size increased under the no action alternative, an indirect negative effect may be increase in burning of riparian areas.

4.3.2 Water Quality

There would be no direct impact to water quality under the no action alternative. Fire intensity and size may increase under the no action alternative. Large-scale, high intensity wildland fires are more likely than low intensity fires to burn through riparian areas and may increase the amount of soil erosion from the uplands. This would result in reduced shading over stream channels and increase sediment input to streams due to lack of the filtering effect of riparian vegetation and increased sedimentation from uplands, causing water quality degradation.

4.3.3 Air Quality

The potential for large-scale wildfires would be greater in areas where fuels treatments do not occur. This would increase the risk of deleterious effects on air quality when wildland fire occurs. The total quantity of smoke and the duration of smoke exposure would be greater with the wildfire compared to the fuels treatments.

4.3.4 Migratory Birds

Large-scale wildfires could continue to burn migratory bird habitat if the PA is not enacted. If high intensity fires do not become less frequent or smaller due to the no action alternative; the degree of impacts to this resource would be proportional to the size and intensity and location of the fires.

4.3.5 Threatened, Endangered, and Special Status Species

4.3.5.1 Special Status Terrestrial Wildlife Species

Large-scale wildfires could continue to burn wildlife habitat if the PA is not enacted. High intensity or large-scale fire may degrade wildlife habitat. The degree of impacts to this resource would be proportional to the size, intensity, and location of the fires.

4.3.5.2 Special Status Plant Species

The consequence relating to Special Status plants would be from wildfires that negatively impact plant populations that may have been protected by the proposed fuel breaks. Large-scale loss or modification of plant habitat could occur if large-scale wildfires occur.

4.3.5.3 Special Status Fish Species

The no action alternative is not expected to directly impact bull trout, Great Basin redband trout, Malheur mottled sculpin, or any other aquatic species. However, indirect negative effects could result from the no action alternative. Large-scale, high intensity wildfires are likely to burn through riparian areas and may increase amount of soil erosion from the uplands. This would result in an increase in water temperature due to reduced shading over stream channels, and increase sediment input to streams due to lack of the filtering effect of riparian vegetation and increased sedimentation from uplands, causing degradation of aquatic habitat and indirect impacts on bull trout, redband trout, Malheur mottled sculpin, and other aquatic species.

4.3.6 Cultural/Historical Resources

There would be no direct effect on the cultural or paleontological resources identified within the Strategic Fuel Breaks under the no action alternative as no reduction of coniferous understory, western juniper, shrubs, or other fuels reduction activities would be implemented. However, if no fuel breaks are established in the RA it would become more likely that archaeological, historic, and paleontological properties would sustain damage from future severe wildfire events. Most commonly, fire-related damage to cultural resources includes the destruction of historic built resources and/or ruins; as well as the degradation by extreme heat of the scientific research value of obsidian dominated archaeological properties located at or near the surface of the ground (Linderman 1992; Skinner et al. 1997). Archaeological resources also frequently sustain damage during fire suppression operations that utilize heavy equipment.

4.3.7 Noxious Weeds

The opportunities for new noxious weed introductions along the road networks could be increased under the no action alternative if wildland fires modify plant habitats in favor of introduced species. New introductions would occur regardless because roads are inherently disturbed sites and introductions occur regularly along them.

The benefits of the fuel breaks would not occur and therefore the incidences of large-scale wildfires would continue. Noxious weed introductions and spread would continue, with burned areas being at high risk.

4.3.8 Areas of Critical Environmental Concern

Biscuitroot ACEC

The Biscuitroot ACEC and other American Indian root collection areas have two physical components to analyze.

1. Edible root habitat is unlikely to be affected by the no action alternative. Because this vegetation community is fire-resistant, allowing wildland fires to burn without strategic fuel breaks will not likely increase fire's affect on these areas.

2. Camping and root processing sites would be affected without protection from wildland fire. Destruction of juniper overstory and shrub species understory would render most sites unusable.

Kiger Mustang ACEC:

There would be no impacts to the ACEC unless a wildfire occurred. Depending on the size of the wildfire in the ACEC, wild horses may be gathered to prevent starvation and to provide for rangeland recovery. This could have a long-term effect on the primary management objective of the ACEC depending on the number of animals which would need to be removed and the recovery time for the rangeland.

4.4 No Action Alternative: Noncritical Elements

4.4.1 Soils

There would be potential impacts to the soil resource under the no action alternative if the areas are burned in a large-scale or high intensity wildfire. If a large wildfire were to occur, the topsoil would be more exposed (compared to a reduced fire stopped by fuel breaks) and wind erosion would be moderate to extreme depending on specific site characteristics (topography, soil type, remaining cover).

4.4.2 Vegetation

Vegetation would be unmodified under the no action alternative. If large-scale wildfires occur, then the potential loss of large amounts of vegetation would be a possibility with the lack of fuel breaks to optimize fire suppression efforts.

4.4.3 Wildlife

Wildlife habitat loss could occur on a large scale if the no action alternative were chosen and large-scale wildland fires occur. If high intensity fires do not become less frequent or smaller due to the no action alternative; the degree of impacts to this resource would be proportional to the size and intensity and location of the fires.

4.4.4 Livestock Grazing Management

Large-scale, intense wildfires tend to replace the native forage species with less productive introduced species such as cheatgrass and medusahead rye. Large-scale fires that could not be stopped in the absence of fuel breaks could displace permittees for periods of up to 2 years. The cost of rangeland restoration in the form of seeding, fences, and erosion control also would increase in relation to the size of the fire.

4.4.5 Recreation

No action could result in a continuation of the current fuel patterns and an increase in the fuel concentrations across the Three Rivers RA. These continuous fuel concentrations could continue to be a threat to public and firefighter safety while at the same time decreasing opportunities for success of wildfire suppression efforts. No action could also result in larger wildfires in the future potentially causing increased costs for wildland fire suppression and increased damage to humanmade and natural resources within the proposed area. Recreation opportunities may also be impacted by large fire activity/suppression and impacts from catastrophic wildfire for many years after the event.

4.4.6 Visual Resource Management

No action could result in larger wildfires in the future potentially increasing costs for wildland fire suppression and increased damage to the humanmade and natural resources within the proposed area. This translates to potentially large-scale loss of visual resources and establishment of large monocultures dominated by cheatgrass and other nonnative plant species or noxious weeds.

4.4.7 Economic and Social

No action could result in a continuation of the current fuel patterns and an increase in the fuel concentrations across the Three Rivers RA. These continuous fuel concentrations could continue to be a threat to public and firefighter safety while at the same time decreasing opportunities for success during wildfire suppression efforts. No action could also result in larger wildfires in the future potentially increasing costs for wildland fire suppression and increased damage to humanmade and natural resources within the proposed area. Hunting opportunities could be reduced under this alternative as a result of large-scale habitat loss. Additionally, hiking and other recreational opportunities could be reduced if large burned areas are less appealing to hike, drive or bike through.

4.4.8 Fire Management

The potential for large-scale wildfires would be greater in areas where fuels treatments do not occur. This would increase the risk to firefighters and the general public. Threats to private lands within the public lands will also increase as the fuels continue to increase. The number of large fires would continue to increase as the fuel continuity and fuel loadings increase. Fireline intensity would be greater in these wildfires due to the large accumulation of fuels. Post-fire actions would have to concentrate on site stabilization and rehabilitation.

4.4.9 Wild Horses

There would be no impacts to wild horses unless a wildfire occurred within an HMA. Depending on the size of the wildfire, wild horses may be gathered to prevent starvation and to provide for rangeland recovery. This could have a long-term effect on the herd depending on the number of animals which would need to be removed and the recovery time for the rangeland.

CHAPTER 5: CUMULATIVE IMPACTS

5.1 Proposed Action: Critical Elements

If the preferred alternative were to be fully implemented, about 0.4 percent (4,000 acres) of the planning area (roughly 1,000,000 acres) would be treated with the methods spelled out in Chapter 2 (and associated Appendices). The 4,000 acres of proposed treatment would be distributed over 311 miles of proposed fuel breaks; additionally this project would be implemented over a period of 5 to 7 years; this is less than 0.1 percent of the total planning area treated per year.

During the time period between 1993 and 2002, wildfires have burned 173,817 acres of the Burns District (Burns Interagency Fire Zone files). If the proposed fuel breaks were implemented, the opportunity for successful wildfire suppression would be increased; this translates into an increased chance for retention of all resources contained in an area that may have burned without the implementation of the PA. Wildfire is a natural part of many northern great basin ecosystems, but the scale and intensity of wildfires was likely much less severe than the current trend seen in many States including Oregon. Many differences distinguish forested systems from sagebrush steppe, but a vast portion of the planning area contains an intermediate transition zone between these two general categories. Proper preventative treatment of BLM-managed land can have a positive impact on surrounding land such as private, Tribal, State, and USFS-managed lands by decreasing the likelihood of wildfires moving from BLM to other landownerships/management.

5.1.1 Wetlands and Riparian Zones

The PA may reduce scale and intensity of wildfires and thus benefit riparian vegetation by reducing the likelihood of fire burning through riparian areas. It is unlikely that the PA would either positively or negatively impact riparian areas at the subbasin or RA scale.

5.1.2 Water Quality

The PA may reduce scale and intensity of wildfires and thus positively influence water quality, but it is unlikely that the PA would either positively or negatively impact water quality at the subbasin or RA scale.

5.1.3 Air Quality

The PA may reduce scale and intensity of wildfires and thus positively influence air quality. Slash burning in the fall would be coordinated with other prescribed fire activities to minimize smoke effects, burning could be delayed if it would conflict with other activities.

5.1.4 Migratory Birds

In the long term (>5 years), it is likely that many species of migratory birds would benefit from the retention of Wyoming big sagebrush habitat and/or the increased diversity of sagebrush age classes the brush beating would provide. In the short term (<5 years), there could be displacement of a few individual migratory birds that utilize the proposed brush beating areas. There would be a decrease in habitat in the brush-beat area for the species that prefer sagebrush such as sage sparrow, Brewer's sparrow, and sage thrasher. There would be an increase in habitat in the brush-beat area for the species that prefer a more open habitat such as horned lark, Western meadowlark, and vesper sparrow.

5.1.5 Threatened, Endangered, and Special Status Species

With regard to any Special Status species mentioned in this document; the proposed treatments would not trend any of the Special Status species toward listing.

5.1.5.1 Special Status Terrestrial Wildlife Species

There would be no known effect to bald eagles, Columbia spotted frogs or pygmy rabbits or their habitat as a result of implementation of the PA.

Approximately 1,500 acres of greater sage-grouse yearlong range would be converted from sagebrush habitat to grassland habitat. Much of this habitat is currently in poor condition due to its proximity to roads and overhead lines. The 1,500 acres represents less than one-half of 1-percent of known greater sage-grouse yearlong range in the Burns District. Further, the brush beating portion of the treatments would allow for some age class diversity within the sagebrush community, while protecting the area from large-scale fire disturbances which negatively impact all of the individual resources, including Bureau Special Status Species of wildlife such as the sage-grouse.

If high intensity fires become less frequent or smaller because of implementation of the PA, greater sage-grouse habitat would be positively impacted. The degree of beneficial impact would be proportional to the reduced size of the fires.

5.1.5.2 Special Status Plant Species

Careful project design elements with additional mitigation provided in the appendices has prevented this PA from negatively impacting Special Status plant species. The PA may reduce scale and intensity of wildfires and thus benefit Special Status plant species by reducing the likelihood of fire burning through their habitat.

5.1.5.3 Special Status Fish Species

Aquatic habitat has been negatively impacted by both human activities and natural events, and many streams within the Three Rivers RA, including the proposed treatment units, have been placed on the ODEQ 303(d) list for exceeding State water temperature standards for cold water fish rearing. Though the PA may reduce scale and intensity of wildfires and thus reduce negative impacts to aquatic habitat and species populations on a small scale, it is unlikely that the PA would either positively or negatively impact the overall viability of bull trout, Great Basin redband trout, Malheur mottled sculpin, or any other aquatic species.

5.1.6 Cultural/Historical Resources

Cultural resources have been negatively impacted by both human activities and natural events. Many cultural and historical resources within the Three Rivers RA are at risk from both types of activities. Though the PA may reduce scale and intensity of wildfires and thus reduce negative impacts to resources, some loss of cover within the fuel breaks could expose some surface resources to potential impact. Careful project design elements are built into the PA to prevent negative impacts to these resources.

5.1.7 Noxious Weeds

While the risks of increased opportunities for weed introduction would be elevated in the short term (<5 years) with implementation of this alternative, the overall benefits which are likely to result from reducing the potential of large wildfires in the area far outweigh those risks.

5.1.8 Areas of Critical Environmental Concern

Biscuitroot ACEC

Cumulative effects of the PA would be most notable on camping and root processing sites. If fuel breaks were designed so that they would protect sites while not affecting the aesthetic/visual/spiritual qualities of those locations, they would decrease the likelihood and, therefore affects, of wildland fire. However, fuel break creation near to or within camp or root processing sites would cause abandonment of the sites.

Kiger Mustang ACEC

The project would benefit the ACEC by maintaining the habitat and reducing the short and long-term impacts of wildland fires. The short and long-term quantity and year-round forage quality is reduced for wild horses when wildfires occur in the ACEC. Any reduction in the size of future wildfires in the ACEC would benefit the primary management objective for wild horses.

Due to the size of the ACEC in relation to the treatment areas, horses would avoid these areas while treatment was being completed. There would be no long-term effects on the primary management objective of the ACEC from the PA.

5.2 Proposed Action: Noncritical Elements

5.2.1 Soils

Soil disturbance and compaction may occur due to mechanical thinning operations, but cumulative effects would be minimal in the long term, especially if the fuel breaks are successful in reducing fire size and/or intensity. Establishment of occasional mineral soil interspaces actually could provide a greater variation of potential plant habitat.

Prevention of large-scale wildfires could prevent large-scale erosion events if the PA is enacted and successful in its goals.

5.2.2 Vegetation

Large-scale loss of vegetation could be prevented or reduced as a result of this PA if wildfire suppression efforts are successful in concert with the proposed fuels treatments. Four thousand acres of vegetation will be modified if the PA is enacted; repeat application of these treatments could increase the modification of these vegetation communities over time.

5.2.3 Wildlife

Large-scale loss of wildlife habitat could be prevented or reduced as a result of this PA if wildfire suppression efforts are successful in concert with the proposed fuels treatments.

Security cover for wildlife species along the roads and highways proposed for treatment would be partially reduced. The improved visibility of big game species near these roads could result in increased illegal activity in the form of hunting from vehicles and nighttime spotlighting.

The proposed project could temporarily affect species such as sagebrush lizard, sagebrush vole, and Townsend's solitaire that depend on sagebrush and juniper habitat for portions of their life cycle, but the areas of proposed treatments are at a maximum 100 feet wide for overstory and understory fuels reduction treatments and do not impact the adjacent similar habitat. Species that prefer grassland habitat such as deer mouse and horned lark may benefit from implementation of the PA.

5.2.4 Livestock Grazing Management

Prevention of large-scale wildfires could prevent large-scale impacts to grazing management by reducing the events that disrupt grazing systems if the PA is enacted and successful in its goals.

5.2.5 Recreation

No action could result in larger wildfires in the future potentially causing increased damage to the humanmade and natural resources within the proposed area. This translates to potentially large-scale loss of recreational resources and establishment of large monocultures dominated by cheatgrass and other noxious weeds.

5.2.6 Visual Resource Management

Limited impacts to visual resources may occur as a result of this PA; however, the retention of large portions of the scenic landscape would likely occur if the fuel breaks are successful in assisting fire suppression efforts.

Long-term retention of large portions of scenic areas and Scenic Byways may occur as a result of this PA.

5.2.7 Economic and Social

Retention of landscape from wildfire impacts (regardless of ownership) would provide for economic and social stability and peace of mind from increased public and firefighter safety. Additionally, projects of this type demonstrate a proactive approach to firefighter, public, and resource safety and contribute to better relations and communication with local interests and the general public.

5.2.8 Fire Management

The PA would likely aid the reduction of negative effects from wildland fires. Strategically located fuel breaks, combined with existing human created fuel breaks would help fire managers achieve many fire management goals.

Firefighter and public safety would be enhanced through implementation of the PA. Direct benefits to firefighters include a reduction of flamelength and fireline intensity that results from fuels reductions. The PA would alter the structure of the fuel (vegetation) in the areas of treatment. Altered fuels produce an altered flamelength and this alteration is a reduction in fuels that would reduce flamelength and also reduce the likelihood of crown fires developing in forested areas.

Fire size reduction is a possible outcome of this PA. If fires are contained to a smaller size, the chance of the fire transitioning into a Type-II or Type-I fire are reduced. Transitions in fire type can be one of the most hazardous periods for firefighters and the public; avoiding this transition reduces risk in many ways.

Smaller fires are less costly to the Federal Government in terms of suppression costs and resources. Likewise a smaller fire has a lesser chance of causing large-scale loss to public, State or private resources if the fire is compartmentalized into a single management unit.

5.2.9 Wild Horses

The project would benefit wild horses by maintaining their habitat and reducing the short and long-term impacts of wildland fires that frequently occur in the area. The short and long-term quantity and year-round forage quality is reduced for wild horses when wildfires occur in the area. Any reduction in the size of future wildfires in the area would benefit wild horses. The viability of wild horse herds is dependent on the health and productivity of their habitat.

There would be temporary disturbance of the horse's normal grazing and trailing in the immediate vicinity of the treatment areas while brush beating or burning is taking place. Due to the size of the HMAs in relation to the treatment areas, horses would avoid these areas while treatment was being completed. There would be no long-term effects on wild horses from this PA.

5.3 Reasonably Foreseeable Future Actions Preferred Alternative

Maintenance of the fuel breaks would consist of substantially similar treatments as spelled out in the PA. Maintenance would not result in the same scale of disturbance as the initial implementation of the PA (if the PA were to be implemented); therefore the percent of disturbance in the project area would be diminished as compared to initial implementation.

Approximately 2,500 acres of western juniper are being cut within the Three Rivers RA each year. The PA could increase the number of acres treated across the RA. However, coordination with the existing western juniper projects would help to control this effect.

5.4 No Action Alternative: Critical Elements

If the no action alternative were to be selected, large-scale wildfires could have impacts to all of the elements or resources by the likely loss or conversion of native vegetation over large areas. No impacts associated with the PA would occur under the no action alternative and therefore cumulative impacts to resources are associated with wildfires that may have been prevented by implementation of the PA.

5.4.1 Wetlands and Riparian Zones

The no action alternative may increase the likelihood of wildland fires carrying into wetlands or riparian zones, but it is unlikely that the PA would either positively or negatively impact riparian areas at the subbasin or RA scale.

5.4.2 Water Quality

No impacts associated with the PA would occur under the no action alternative and therefore cumulative impacts to resources are associated with wildfires that may have been prevented by implementation of the PA. It is unlikely that the PA would either positively or negatively impact riparian areas at the subbasin or RA scale.

5.4.3 Air Quality

No impacts associated with the PA would occur under the no action alternative and therefore cumulative impacts to air quality are associated with wildfires that may have been prevented by implementation of the PA. Large-scale wildland fire causes huge dispersal of smoke locally and down range and this possibility would be greater under the no action alternative.

5.4.4 Migratory Birds

No impacts associated with the PA would occur under the no action alternative and therefore cumulative impacts to migratory birds would be proportional to the habitat loss from wildfires that may have been prevented by implementation of the PA.

5.4.5 Threatened, Endangered, and Special Status Species

5.4.5.1 Special Status Terrestrial Wildlife Species

No impacts associated with the PA would occur under the no action alternative and therefore cumulative impacts to Special Status wildlife species are associated with wildfires that may have been prevented by implementation of the PA.

5.4.5.2 Special Status Plant Species

No impacts associated with the PA would occur under the no action alternative and therefore cumulative impacts to Special Status plant species are associated with wildfires that may have been prevented by implementation of the PA.

5.4.5.3 Special Status Fish Species

No impacts associated with the PA would occur under the no action alternative and therefore cumulative impacts to Special Status fish species are associated with wildfires that may have been prevented by implementation of the PA.

5.4.6 Cultural/Historical Resources

No impacts associated with the PA would occur under the no action alternative and therefore cumulative impacts to cultural and historic resources are associated with wildfires that may have been prevented by implementation of the PA.

5.4.7 Noxious Weeds

No impacts associated with the PA would occur under the no action alternative and therefore cumulative impacts concerning noxious weeds are associated with wildfires that may have been prevented by implementation of the PA.

5.4.8 Areas of Critical Environmental Concern

Biscuitroot ACEC:

Cumulative effects under the no action alternative would be most notable on camping and root processing sites. This is especially true if untreated juniper slash is allowed to accumulate in juniper removal units in the vicinity of the Biscuitroot ACEC. Increased fuel loads could increase wildfire intensity and likelihood of spread into camping and root processing sites.

Kiger Mustang ACEC:

No impacts associated with the PA would occur under the no action alternative and therefore cumulative impacts to resources are associated with wildfires that may have been prevented by implementation of the PA.

5.5 No Action Alternative: Noncritical Elements

5.5.1 Soils

If the no action alternative were to be selected, large-scale wildfires could have impacts to soils by the likely loss or conversion of native vegetation over large areas and the potential for erosion. No impacts associated with the PA would occur under the no action alternative and therefore cumulative impacts to resources are associated with wildfires that may have been prevented by implementation of the PA.

5.5.2 Vegetation

If the no action alternative were to be selected, large-scale wildfires could have impacts to all of the elements or resources by the likely loss or conversion of native vegetation over large areas. No impacts associated with the PA would occur under the no action alternative and therefore cumulative impacts to resources are associated with wildfires that may have been prevented by implementation of the PA.

5.5.3 Wildlife

No impacts associated with the PA would occur under the no action alternative and therefore cumulative impacts to wildlife would be proportional to the habitat loss from wildfires that may have been prevented by implementation of the PA.

5.5.4 Livestock Grazing Management

If the no action alternative were to be selected, large-scale wildfires could have impacts to all of the elements or resources by the likely loss or conversion of native vegetation over large areas. No impacts associated with the PA would occur under the no action alternative and therefore cumulative impacts to resources are associated with wildfires that may have been prevented by implementation of the PA.

5.5.5 Recreation

If the no action alternative were to be selected, large-scale wildfires could have impacts to all recreational resources by the likely loss or conversion of native vegetation over large areas. No impacts associated with the PA would occur under the no action alternative and therefore cumulative impacts to recreation are associated with wildfires that may have been prevented by implementation of the PA.

5.5.6 Visual Resource Management

If the no action alternative were to be selected, large-scale wildfires could have impacts to all of the elements or resources by the likely loss or conversion of native vegetation over large areas. No impacts associated with the PA would occur under the no action alternative and therefore cumulative impacts to visual resources are associated with wildfires that may have been prevented by implementation of the PA.

5.5.7 Economic and Social

Potential loss of resources from wildfire impacts (regardless of ownership) would not provide for economic and social stability and peace of mind due to a potential decrease in public and firefighter safety. Additionally, the BLM would lose an opportunity to demonstrate a proactive approach to firefighter, public, and resource safety and contribute to better relations and communication with local interests and the general public.

5.5.8 Fire Management

The potential for large wildland fire to occur increases each year. Fuel structure and composition would continue to homogenize (becoming more uniform) across the planning area, making suppression and containment more difficult and costly. Under these conditions direct attack strategies are less often utilized, instead indirect attack strategies (especially during severe burning conditions) are instead utilized and this often means sacrificing land to achieve suppression objectives.

Risk to Tribal, State, private, and USFS-managed land adjacent to the project area will also increase over time. Wildland fire would be unrestricted in its potential to move across land management boundaries and this translates into a greater potential for large-scale complex wildland fires.

Large wildland fires are expensive to manage during and after a fire event. Rehabilitation of land post fire event is expensive and takes years to implement. Mitigation of situations caused by fire events may take years to implement and may be only partially successful.

5.5.9 Wild Horses

No impacts associated with the PA would occur under the no action alternative and therefore cumulative impacts to wild horses would be proportional to the habitat loss from wildfires that may have been prevented by implementation of the PA.

5.6 Reasonably Foreseeable Future Actions No Action Alternative

Approximately 2,500 acres of western juniper are being cut within the Three Rivers RA each year. The no action alternative could increase the number of acres at risk from wildland fires across the RA if wildfires potentially stopped by the fuel breaks move onto juniper slash sites.

CHAPTER 6: CONSULTATION AND COORDINATION

6.1 Individuals, Corporations, and Agencies Consulted

Burns Paiute Tribe (via Scott Thomas, Burns District Archaeologist)
Harney County Court
U.S. Forest Service

6.2. Participating BLM Employees

Doug Linn, Fire-Botanist, Lead Preparer
Interdisciplinary Team:
Bill Andersen, Range Management Specialist
Lindsay Aschim, Watershed Specialist
Jim Buchanan NRS Supervisor
Angie Foster, Fuels Planner
Gary Foulkes, Planning and Environmental Coordinator
Terri Geisler, Geologist
Fred McDonald, Natural Resource Specialist
Jon Reponen, Natural Resource Specialist
Lesley Richman, Weeds Specialist
Jeff Rose, Fire Ecologist
Donald Rotell, Fire-Archaeologist
Tom Seley Wild Horse Specialist
Willie Street, Range Management Specialist
Fred Taylor, Wildlife Biologist
Nora Taylor, District Botanist
Cynthia Weston, Fisheries Program Lead

CHAPTER 7: REFERENCES

- Linderman, Carole A., 1992, *The Effects of Fire on Obsidian Artifacts: A Problem in Hydration Dating in a Woodland Environment*. Unpublished Senior Honors Paper, Department of Anthropology, University of Oregon, Eugene, Oregon.
- Skinner, Craig E., Jennifer J. Thatcher, and M. Kathleen Davis, 1997, *X-Ray Fluorescence Analysis and Obsidian Hydration Rim Measurement of Artifact Obsidian from 35-DS-193 and 35-DS-201, Surveyor Fire Rehabilitation Project, Deschutes National Forest, Oregon*. Report 1996-33 prepared for the Deschutes National Forest, Bend, Oregon, by Northwest Research Obsidian Studies Laboratory, Corvallis, Oregon.

Appendix A

Strategic Fuels Planning Unit (SFPU) maps and names for the proposed Planning Area:

The following 14 SFPUs have been developed for this PA.

1. **Potato Hills**
2. **Silver Creek**
3. **Lone Pine** - Contains the cities of Burns, Hines, and the Burns Paiute Reservation
4. **Poison Creek**
5. **Rattlesnake**
6. **Drewsey** - The rural community of Drewsey is on the edge of this fuel break zone
7. **Cottonwood**
8. **North Warm Springs**
9. **South Warm Springs**
10. **Beaver Tables**
11. **Riddle** - Contains the rural community of Diamond
12. **Diamond Craters**
13. **Silvies Valley**
14. **Crane-Buchanan** - The rural community of Buchanan is on the north edge and Crane is on the south edge of this fuel break zone

Appendix B

Values at Risk.

Appendix C

Wildland Urban Interface Community Assistance Grants, National Environmental Policy Act, Endangered Species Act, and National Historic Preservation Act Compliance Information

This information is provided to assist County, City, and other interests understand their responsibilities for compliance with National Environmental Policy Act (NEPA), Endangered Species Act (ESA), and cultural policies. Potential actions involving Federal funding must comply with these requirements regardless of landownership.

National Environmental Policy Act Compliance

From a NEPA perspective, selection and funding of projects on private lands constitutes a Federal action, thus is subject to documentation under the Act's requirements.

Documentation requirements need not be burdensome. Most frequently, a Categorical Exclusion (CE) may be used. In particular, the following Bureau of Land Management (BLM) CEs (516 DM 6, Appendix 5) may be applicable:

- C.2. Sale and removal of individual trees or small groups of trees which are dead, diseased, injured, or constitute a safety hazard, and where access for the removal requires no more than maintenance to existing roads.

- C.4 Pre-commercial thinning and brush control using small mechanical devices.

In addition, the following CE may apply when projects are co-funded by another Department of the Interior agency (U.S. Fish and Wildlife Service, National Park Service or Bureau of Indian Affairs):

- H.11 Actions where the BLM has concurrence or co-approval with another Department of the Interior agency and the action is categorically excluded for that agency.

Endangered Species Act Compliance

Section 7(a)(2) of the ESA requires Federal agencies, in consultation with the Secretary of the Interior, to ensure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of any listed species or destroy or adversely modify any designated critical habitat. These actions can take place on Federal or non-Federal lands. When BLM provides funding to local communities for hazardous fuels reduction, it is an action that requires compliance with Section 7(a)(2).

This consultation should be conducted using the Streamlining Protocols outlined in the Instruction Memorandum dated May 31, 1999, and updated by subsequent Instruction Memoranda. There is National Fire Plan Consultation design criteria, as well as other local level 1 team design criteria, available to offer to the grant recipients for ideas.

National Historic Preservation Act Compliance for Fire Grants

National Historic Preservation Act. This is the primary Federal law that directs agencies to practice historic preservation.

For all proposed BLM undertakings that might affect significant historic properties, BLM must comply with Section 106 of the NHPA as amended. This includes actions and authorizations funded in whole or in part under the BLM's direct or indirect jurisdiction and regardless of whether or not an undertaking would take place on Federal or non-Federal lands. Regulations of the Advisory Council on Historic Preservation, implementing Section 106, define undertakings requiring compliance with the NHPA as: A...a project, activity, or program funded in whole or in part under the direct or indirect jurisdiction of a Federal agency, including those carried out by or on behalf of a Federal agency; those carried out with Federal financial assistance; [and] those requiring a Federal permit, license or approval@ 36 CFR 800.16(y). The primary question is whether or not significant historic properties would be affected, not who owns them.

In Oregon, the 1997 Cultural Protocol with the Oregon SHPO guides BLM compliance with Section 106. The protocol exempts most BLM projects from strict consultation requirements. BLM is still compelled to perform all of the routine internal considerations of potential effects, including possible pre-project field inspections and subsequent completion of an inventory report and completed site forms. If no significant cultural resources are identified by the review, the results of the cultural resource assessments are provided to the BLM decisionmaker and resulting cultural resources documentation is submitted to SHPO for information purposes. The project may proceed without waiting for SHPO response. If cultural resources are identified in the proposed project area, the nature and importance of effects are evaluated and mitigation measures are considered according to procedures in the SHPO protocol. If the resources are determined to be eligible to the NRHP, the project work can usually be redesigned as necessary to avoid impacts.

In summary, Section 106 requires Federal decisionmakers to *take into account* potential effects on significant historic resources through a process that weighs and reconciles competing public interests. Its purpose is to ensure that agencies will not proceed without giving historic preservation due consideration.

Summary

Implementation of fuels treatment mitigation actions, such as prescribed burns, mechanical treatments, chemical treatments or biological treatments on Federal land, requires documentation of compliance with all three of the above laws. Implementation of these actions on non-Federal land requires NEPA review when BLM is involved in site-specific project selection and/or project implementation. Projects on non-Federal land funded in whole or in part by BLM require compliance with NHPA and/or ESA. Funding will be transferred for non-Federal land projects through Cooperative Agreements coordinated at the State Office. When required, it continues to be BLM's policy to ensure that NEPA, NHPA, and ESA compliance documentation is completed prior to implementing on-the-ground actions (<http://web.or.blm.gov/records/im/2003/im-or-2003-037.htm>).

Appendix D

Project Design Elements for the Proposed Action:

Areas of Critical Environmental Concern, Research Natural Areas, Outstanding Natural Areas:

Any area of proposed treatment within one of these special designation areas will be subject to stipulations set forth in their specific management plans. If fuel breaks are determined at any point to be in conflict with these plans, those sections of the proposed treatments will be eliminated from the project and no treatment will occur on them.

Brush Beating:

Allow brush beating on appropriate sites in the project area with 12-foot wide mowers which are mounted behind rubber-tired tractors; the process creates little to no ground disturbance as the vegetation is mowed to 6 to 14 inches in height. Vary the width of brush beating from 12 to 50 feet (assume 50 feet for inventories) on either side of road depending on sagebrush density and height (generally species and site productivity dependent), topography, and road features to create fuel breaks which would be likely to improve fire suppression activities. Generally, this activity would take place between August 1 and April 30 and would be restricted by the project design features listed below.

Allow brush beating adjacent to the identified roads to optimize wildland fire suppression efforts in Wyoming big sagebrush communities which are important sage-grouse and other sagebrush obligate species habitats.

Total width of the brush-beat strips within one-half mile of a sage-grouse lek and in sage-grouse winter areas would be 12 feet on either side of the road.

Project areas would be surveyed for pygmy rabbit occurrence prior to mowing and no mowing would occur within one-quarter mile of pygmy rabbit habitat containing typical pygmy rabbit burrows.

Allow brush beating in areas of low sagebrush (*Artemisia arbuscula*) with intermittent big sagebrush species, the width of brush beating would be 12 feet on either side of the identified road; the low sagebrush is not the target of the brush beating, but may have some minor beating occur as the big sagebrush species are brush beat. Any brush beating in these *A. arbuscula*/*A. tridentata* communities would be constrained by the pygmy rabbit restrictions mentioned above.

Brush beating equipment (including trailers used to haul the equipment and vehicles driving out to the project sites which have gone off-road) will be thoroughly washed (including a focus on the undercarriages) prior to going to the worksite as well as upon completion of work at that site. This will minimize the transport of noxious weeds to the project site as well as minimizing transport from the project site to other areas.

Coordinate the timing of brush beating so as to not adversely impact current weed control treatments.

The action of brush beating alongside and within 50 feet of existing roadbeds may not warrant a Class III cultural resource inventory survey. A Class II survey of the project area could instead be conducted with a focus on the high probability areas including those with very fragile sediments.

Wildlife Project Design Elements and Constraints:

Actions may take place within 2 miles of the bald eagle winter roosts only between April 1 and November 30 annually. Fuel treatments that take place within the buffer areas of the bald eagle winter roosts would preserve old (30 inches + DBH) ponderosa pine and favor middle aged (18 to 30 inches DBH) ponderosa pine for replacement roost trees.

A survey for Columbia spotted frog would be conducted prior to any actions taking place in riparian areas.

Where available in the ponderosa pine sites, maintain the following numbers and sizes of snags averaged per 100 acres: Seventy five snags between 10 and 12 inches DBH, 136 snags between 12 and 20 inches DBH, and 14 snags over 20 inches DBH. This would provide for 100 percent of the primary cavity excavators in the proposed project area. Basically no snags are proposed to be removed under this PA.

If active raptor nests are encountered during project implementation, work will cease until a wildlife biologist makes a determination of actions needed to ensure that the nest and surrounding area remain suitable for the particular species encountered.

Juniper Reduction Constraints:

Limit the removal of western juniper with the following characteristics:

1. Lichen on dead branches.
2. A relatively open rounded canopy.

Riparian Areas/ Rare Plant Sites:

Where the proposed fuel breaks overlap riparian areas or rare plant sites, the area of fuels treatment could be unnecessary (due to the natural fuel break the riparian area provides or limited fuels in the Special Status-plant site) or could be offset to limit disturbance to any riparian vegetation or Special Status-plant sites. Potential impacts to riparian areas and Special Status plant sites would be mitigated by avoidance as much as possible and would be done in coordination with the Burns District rare plant specialists (see Appendix D for Special Status Plant names, status, and mitigation measures).

Cultural:

Project design elements will be observed during implementation of the PA or its alternatives in order to avoid or minimize impacts to archaeological sites in the Strategic Fuel Breaks APE.

Project design elements include:

- If cultural resources are located during implementation of the PA, work will be halted and the Fire Archaeologist will be notified. The cultural resource will be evaluated and a mitigation plan developed in consultation with the Oregon State Historic Preservation Office (SHPO) if necessary.
- No machine piled or hand piled slash will be placed within the boundaries of any significant lithic oriented archaeological site. No slash piles will be burned within this site type.
- Only rubber-tired heavy equipment will be allowed to operate within the boundaries of sites with archaeological values. Activities that commonly result in ground-disturbance, such as skidding large diameter logs, will not be permitted to occur within archaeological properties.

Safety:

In any area where treatment has been limited due to resource or other concerns, the risk of having a wildland fire jump the fuel break increases. To optimize suppression activities a map will be produced (and given to the Burns Interagency Fire Zone) that shows the location of the fuel breaks so that fire resources can be directed strategically in case of wildland fire in that particular area.

Appendix E

Special Status Plants, Scientific Names, Status, Mitigation Measures

Carex cordillerana, Bureau Assessment species, ONHP List 2

Information received from the Carex Working Group indicates that this is a shallowly rhizomatous species which would suffer if burned. It has been found along the edges of juniper areas. If sites are discovered during clearance surveys, they should not be burned, but thinning would be allowed. Sufficient notice prior to treatment activities will be provided to the RA botanist to allow sites to be marked in the field for avoidance.

Biddle's lupine, *Lupinus biddlei*, Bureau Tracking, ONHP List 4

This species is apparently disturbance tolerant, including burning. Bureau tracking species do not require mitigation.

Cusick's buckwheat, *Eriogonum cusickii*, Bureau Sensitive, State Candidate, OHNP List 1, USFWS Species of Concern

The affects of disturbance to this species are unknown. It has a very limited distribution and is unlikely to be discovered in the treatment areas identified in this EA. If sites are found during pre-disturbance surveys, they should be avoided. The RA botanist will be given adequate notice prior to proposed treatment so that sites can be marked on the ground.

Deschutes milkvetch, *Astragalus tegetarioides*, Bureau Sensitive, State Candidate, ONHP List 1

This species has been found in proposed treatment areas. This species is tolerant of most types of disturbance. Do not pile and burn vegetation on sites. RA botanist will be given sufficient time prior to treatment in population areas to mark sites for avoidance.

Dwarf lousewort, *Pedicularis centranthera*, Bureau Tracking, ONHP List 3

This species has been found in proposed project areas. It has been found in a wide variety of vegetation types and is tolerant of disturbance, including fire and fuels reduction cutting treatments. As a Bureau Tracking species, no mitigation is required. The most recent ONHP rare plant meeting recommends dropping this species from all lists.

Early sedge, *Carex praeceptorium*, Bureau Tracking, ONHP List 3

As a Bureau tracking species, mitigation is not required.

Leafy pondweed, *Potamogeton foliosus* var. *fibrillosus*, Bureau Assessment, ONHP List 2-ex

This species is considered extirpated from Oregon. If found during botanical clearance surveys sites need to have complete site information recorded and the ONHP should be notified that the species has been located. If numbers allow, samples should be collected and sent to the OSU Herbarium for identification confirmation. Potential sites would be unaffected by the PA.

Leiberg's clover, *Trifolium leibergii*, Bureau Sensitive, State candidate, ONHP List 1, USFWS Species of Concern

The effects of disturbance to this species are unknown. It has a very limited distribution and is unlikely to be discovered in the treatment areas identified in this EA. If sites are found during pre-disturbance surveys, they should be avoided. The RA botanist will be given adequate notice prior to proposed treatment so that sites can be marked on the ground.

Lowland rotala, *Rotala ramosior*, Bureau Assessment, ONHP List 2

This species is only known from one site in Diamond Craters. That site would not be impacted by the proposed treatment in the Diamond Craters Unit. If clearance surveys discover additional sites, they should be avoided and not treated. Adequate notice will be given to the RA botanist to allow for sites to be marked on the ground prior to treatment activities.

Malheur prince's plume, *Stanleya confertiflora*, Bureau Sensitive, ONHP List 1, USFWS Species of Concern

This species appears to be tolerant of burning, however, in the Burns District, population areas that have burned have rapidly become infested with medusahead rye (*Taeniatherum caput-medusae*) which is a noxious weed. After infestation, prince's plume appears to decline. There are several prince's plume sites along the Warm Springs Road that are identified for treatment. These areas should not be treated, especially areas in likely habitat that have not burned recently and still maintain a sagebrush overstory.

Nodding melic, *Melica stricta*, Bureau Tracking, ONHP List 4

This grass grows in a very remote area of the Riddle Unit. It is unlikely, although possible, that it may be found in treatment locations. As a Bureau tracking species, mitigation is not required, however, recommendations at the most recent ONHP rare plant meeting recommend moving this species to list 2, which would change its status to a Bureau Assessment species. I would recommend avoiding sites if found due to its limited distribution.

Pinewoods cryptantha, *Cryptantha simulans*, Bureau Tracking, ONHP List 3

This is a Bureau tracking species and no mitigation is required.

Raven's biscuitroot, *Lomatium ravenii*, Bureau Assessment, ONHP List 2

The response of this species to disturbance is unknown. Sites should be avoided and not treated. Sufficient notice will be provided to the RA botanist so that sites can be marked on the ground.

Short-lobed penstemon, *Penstemon seorsus*, Bureau Tracking, ONHP List 3

No mitigation is required for this species. The recommendation at the most recent ONHP rare plant meeting is that it be moved to list 4.

Snowball cactus, *Pediocactus simpsonii* var. *robustior*, Bureau Tracking, ONHP List 4

Remote known sites and narrow habitat requirements make it highly unlikely that this species will be found in treatment areas. As a tracking species, mitigation is not required.

Waterthread pondweed, *Potamogeton diversifolius*, Bureau Assessment, ONHP List 2

Sites should be avoided. Adequate notice will be given to the RA botanist to allow sites to be marked in the field prior to the start of treatment activities in the vicinity.

Definitions

ONHP – Oregon Natural Heritage Program

List 1 – Species which are endangered or threatened throughout their range.

List 2 – Species which are threatened, endangered or possible extirpated from Oregon, but are stable or more common elsewhere. Taxa extirpated from Oregon are included with as –ex following this list number.

List 3 – Species for which more information is needed before status can be determined, but which may be threatened or endangered in Oregon or throughout their range. This is also known as the review list.

List 4 – Species which are not currently threatened or endangered. It includes taxa which are very rare but are currently secure, as well as taxa which are declining in numbers or habitat but are still too common to be proposed as threatened or endangered.

USFWS – United States Fish and Wildlife Service

-ex – Extirpated.

Appendix F

General Soils

Appendix G

Visual Resource Management Classes

Appendix H

Herd Management Areas