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Environmental Assessment

CINDER HILL
RANGE ALLOTMENT ENVIRONMENTAL ASSESSMENT

Bend/Ft. Rock Ranger District, Deschutes National Forest
Deschutes County, Oregon

ALTERNATIVES

ALTERNATIVE 1 – CURRENT PRACTICES

ALTERNATIVE 2 – PROPOSED ACTION

ALTERNATIVE 3 – NO GRAZING

ALTERNATIVE 4 – GRADUAL GRAZING REDUCTION

ALTERNATIVE 2 is the PREFERRED ALTERNATIVE

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CHAPTER 1

INTRODUCTION

The Bend-Fort Rock Ranger District, Deschutes National Forest has initiated the Cinder Hill Environmental Assessment (EA) that includes an analysis of reauthorizing grazing permits, revision of Allotment Management Plans (AMP), range improvements, and restructuring allotment boundaries.

DOCUMENT STANDARDS

The Forest Service has prepared this Environmental Assessment in compliance with the National Environmental Policy Act (NEPA) and other relevant federal and state laws and regulations. This Environmental Assessment discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and alternatives. The document is organized into four parts:

Introduction*:* The section includes information on the history of the project proposal, the purpose of and need for the project, and the agency's proposal for achieving that purpose and need. This section also details how the Forest Service informed the public of the proposal and how the public responded.

Alternative Descriptions, including the Proposed Action: This section provides a more detailed description of the agency's proposed action as well as alternative methods for achieving the stated purpose. These alternatives were developed based on issues raised by the public and other agencies. This discussion also includes possible mitigation measures.

Affected Environment and Environmental Consequences*:* This section provides a detailed description of the affected resources within the project area. These existing conditions are the baseline against which the affects of each alternative are measured. It also describes the environmental effects of implementing the proposed action and other alternatives. This analysis is organized by resource area. Within each section, the affected environment is described first, followed by the effects of the No Action Alternative that provides a baseline for evaluation and comparison of the other alternatives that follow.

Agencies and Persons Consulted: This section provides a list of preparers and agencies consulted during the development of the environmental assessment.

Appendices: The appendices provide more detailed information to support the analyses presented in the environmental assessment. Additional documentation, including more detailed analyses of project-area resources, may be found in the project planning record located at the Bend-Fort Rock Ranger District Office in Bend, Oregon.

BACKGROUND

Project Location

The Cinder Hill project area is bounded by Highway 97 on the west; the Deschutes National Forest Boundary on the north and east and the Newberry National Volcanic Monument (NNVM). The western portion of the north boundary has a common boundary with the Bend Urban Growth boundary. Bureau of Land Management (BLM) lands and scattered private lands form the remainder of the north boundary and the entire east boundary (Figure 1). The western portion of the project area is located approximately two miles south of the south boundary of the City of Bend. The eastern edge, the Pine Mountain area, is located approximately 30 air miles southeast of Bend.

The project area is located within Township 19 South, Ranges 12-14 East, Township 20 South, Ranges 13-15 and Township 21 South, Ranges 14 and 15. Elevations range from 3,900 feet along the north boundary to approximately 6,550 feet on Pine Mountain.

The project area totals approximately 89,320 acres, including 88 acres of private

Figure 1 Vicinity Map, Cinder Hill Project Area, Bend-Fort Rock Ranger District, Deschutes National Forest.

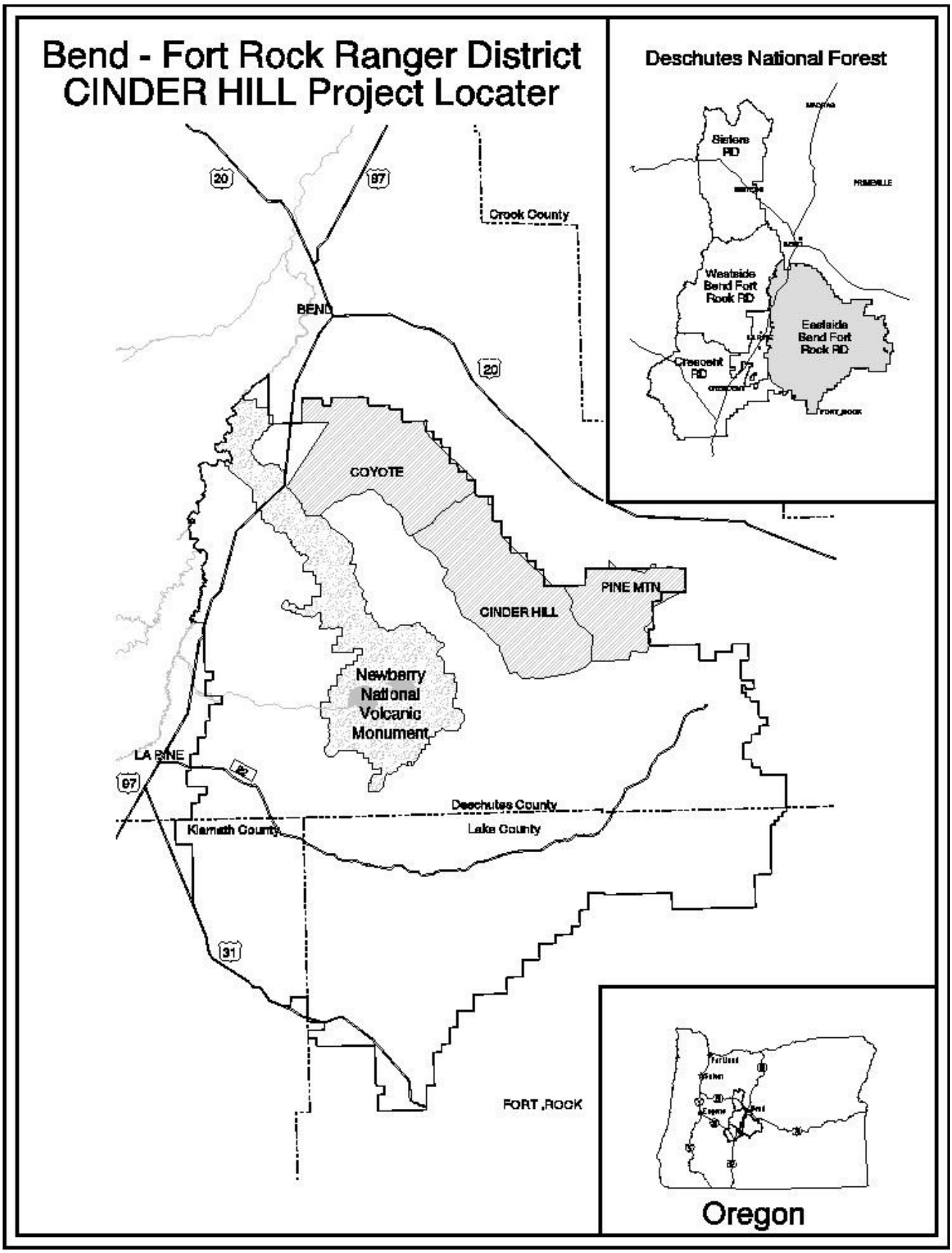
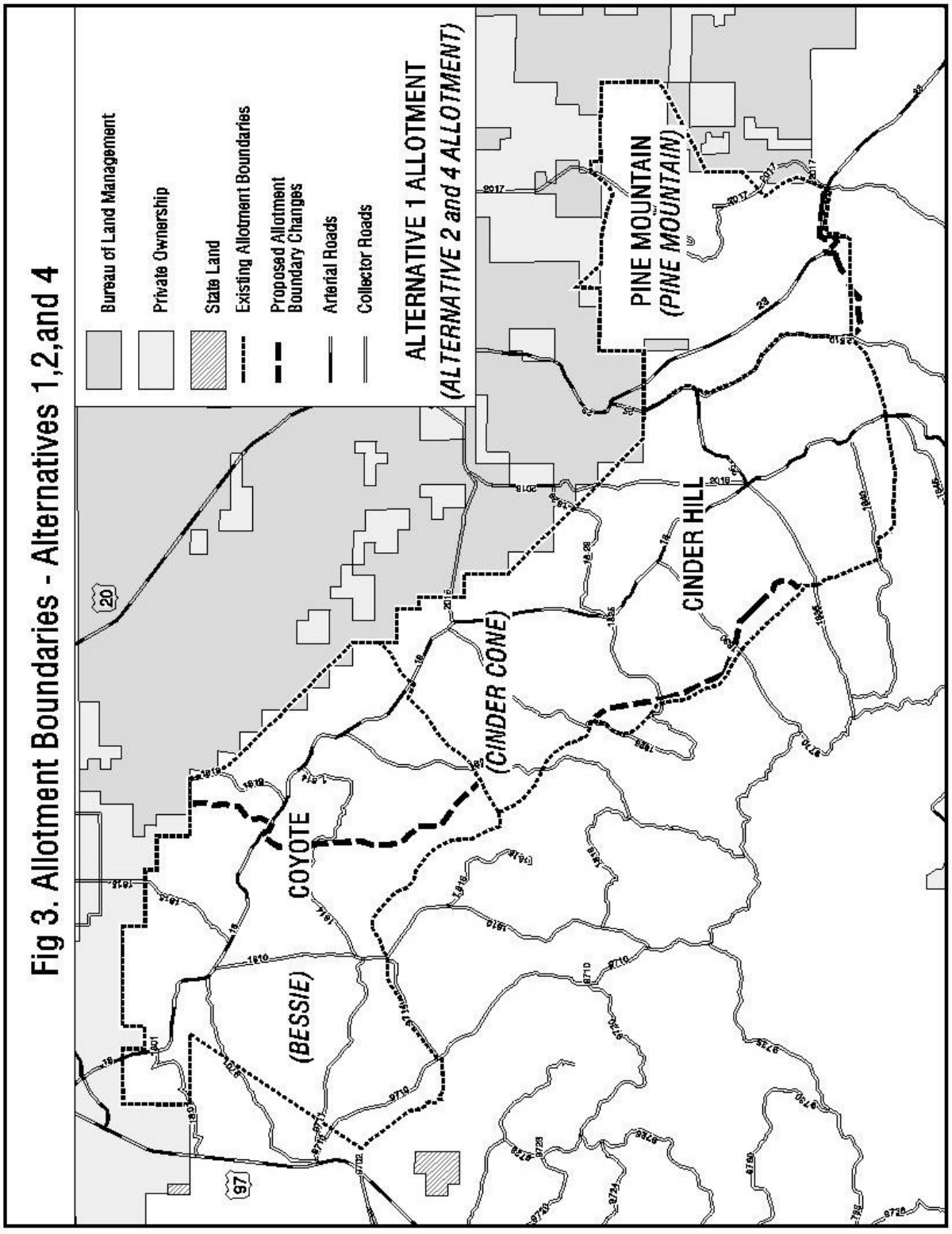


Figure 2 Forest Plan Land Allocations and Allotment Boundaries, Cinder Hill Project Area.



lands and 985 acres of federal lands managed by the USDI Bureau of Land Management (BLM) (approximately one percent of the project area). It includes three (3) range allotments: the Coyote Cattle and Horse Allotment with 35,181 acres; the Cinder Hill Cattle and Horse Allotment with 37,135 acres; and the Pine Mountain Cattle and Horse Allotment with 17,007 acres (Figure 2).

Management Direction

The Deschutes National Forest Land and Resource Management Plan (LRMP) (1990) identifies four (4) management allocations within the project area; MA 7, MA 8, MA 9 and MA15 (Figure 2).

Deer Habitat (MA 7) covers 62,766 acres or approximately 70 percent of the project area. The objectives for this allocation are to provide optimum habitat on deer winter and transition ranges, domestic livestock forage, wood products, recreational opportunities, and visual quality (LRMP p 4-113). It is located primarily along the forest boundary on the north and east sides of the project area. General Forest (MA 8) is the second largest allocation in the project area covering 15,207 acres or approximately 17 percent of the area. This allocation provides an emphasis of timber production while providing forage production, visual quality, wildlife habitat, and recreational opportunities (LRMP p 4-117). It is located primarily along the south and southwest boundary of the project area.

Scenic Views (MA 9) encompass 8,891 acres or approximately 10 percent of the project area. The objective of this allocation is to provide forest visitors with high quality scenery that represents the natural character of Central Oregon (LRMP p 4-121). The majority is located on the north side of Pine Mountain. The remainder is located in several narrow trail corridors in the western end of the project area linking the forest boundary and the NNVM.

Old Growth (MA 15) encompasses 1,365 acres or approximately two (2) percent of the project area. The objective of this allocation is to provide naturally evolved old growth forest ecosystems for:

- habitat for plant and animal species associated with old growth forest ecosystems;
- representations of landscape ecology;
- public enjoyment of large, old-tree environments; and
- the needs of the public from an aesthetic spiritual sense (LRMP p 4-149).

There are three (3) old growth management areas (OGMA) located within the project area boundaries. OGMA 32, approximately 99 acres, is located in the western portion of the Coyote Allotment. OGMA 82, approximately 114 acres, is located in the southern part of the Cinder Hill Allotment, OGMA F11, approximately 1,176 acres, is located at the top of Pine Mountain in the Pine Mountain Allotment.

The LRMP identifies goals for range: "To manage the forage resources for long-term sustained productivity through attainment of upward or stable vegetative trends, protection of the basic soil and water resources, and meet public needs for multiple resource outputs." (LRMP page 4-49). The objective is to improve all range conditions to good or excellent by modifying management to better use upland forage.

The LRMP also includes utilization standards and direction to develop and maintain Allotment Management Plans (AMPs) to incorporate and reflect other LRMP direction. The current AMPs for the Coyote, Cinder Hill, and Pine Mountain Allotments were adopted in 1981, 1991, and 1983 respectively. AMPs were developed and modified using LRMP range Standards and Guidelines for each management allocation. Livestock forage utilization is controlled to provide sufficient browse and forage to support Oregon Department of Fish and Wildlife (ODFW) herd populations. Grazing systems, stocking levels, forage use standards and range improvement projects are designed to be compatible with or complementary to the deer habitat objectives (M7-8 and M7-9, LRMP p 4-114).

The LRMP was amended by the *Inland Native Fish Strategy* (INFISH) and *Interim Strategies for Managing Anadromous Fish-Producing Watersheds in Eastern Oregon and Washington, Idaho and Portions of California* (PACFISH), both in 1995. Both established standards and guidelines related to grazing management. These include guidelines for implementation and effectiveness monitoring. There are surface water sources within the project area; PACFISH and INFISH standards and guidelines are not applied to this project.

The LRMP was also amended by the *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl* (April 13, 1994). That decision established standards and guides for resource management projects located within the range of the northern spotted owl. The Cinder Hill Project area is not located on lands covered under this decision and therefore those standards and guidelines are also not applied to this project.

There are no inventoried (RARE II) roadless areas within or adjacent to the project area. The closest inventoried roadless area is the Newberry Crater area in the Newberry National Volcanic Monument, ranging from approximately two (2) to six (6) miles west to south of the project area.

There are no known Threatened or Endangered species within the project area. There are three (3) plant and animal species listed on the Region 6, Regional Forester's Sensitive Species List found within the project area – western sage grouse (***Centrocercus urophasianus***), green-tinged paint brush (***Castilleja chlorotica***) and Pumice grape fern (***Botrychium pumicola***).

The project area contains nesting and brood rearing habitat for western sage grouse. This species is proposed for listing as a threatened, endangered or sensitive species by the USDI Fish and Wildlife Service (USFWS).

The project area contains potential habitat for pygmy rabbits (***Sylvilagus idahoensis***), also a Region 6 Sensitive Species. This species has not been documented in the project area.

The project area also contains potential habitat for western sagebrush lizards, a species of concern for the USFWS.

This project is consistent with the requirements and design criteria contained in the 2001-2003 and 2003-2006 Joint Aquatic and Terrestrial Programmatic Biological Assessment for Federal lands within the Deschutes Basin.

PURPOSE AND NEED FOR ACTION

PURPOSE

The purpose of the Cinder Hill project is:

- compliance with Section 504 of the 1995 Rescissions Bill (P.L. 104-19);
- to reauthorize grazing in the Coyote, Cinder Hill and Pine Mountain Range Allotments;
- updated allotment management plans that reflect current laws, regulations and management direction;
- authorize construction, reconstruction and maintenance of range improvements, including fence lines, water sets and related facilities, to improve the distribution of livestock, protect other resources, and maintain or restore authorized use levels within each allotment;
- to protect and enhance wildlife and range habitats by proper grazing practices;
- to utilize grazing to help establish and maintain vegetative communities that are more resistant to disturbance from events such as wildfire;
- to utilize grazing to help reduce and maintain low fuel loadings; and
- reduce conflicts between grazing operations and other resources and resource users.

There is a need for:

1) allotments with a sufficient number of pastures to allow the proper application of rest-rotation grazing systems;
2) permitted allotment use levels;
3) replace or repair improvements destroyed or damaged by fire;
4) minimize the impacts of wild and prescribe fire activities on permittees;
5) minimize the loss or relocation of existing water sets;
6) increase the number of water sets to improve livestock distribution and forage utilization;
7) maintain or improve the placement of water sets within each pasture and allotment;
8) restore or maintain road access to water set locations;
9) reduce conflicts between grazing permittees and other forest and rangeland users;
10) extend the duration and effectiveness of mechanical and prescribed fire fuel reduction treatments in wildland urban interface areas;
11) maintain sufficient browse to support target populations of mule deer as designated by ODFW;
12) minimize browsing of bitterbrush by livestock; and
13) improve upland vegetation conditions and allow for forage utilization by modifying grazing practices and implementing cost effective range improvements.

Section 504 of the 1995 Rescissions Bill, requires each National Forest System unit establish and adhere to a schedule for the completion of National Environmental Policy Act (NEPA) (1969) analysis and decisions on all allotments on that unit for which NEPA analysis is needed.

There is a need comply with Section 504 of the 1995 Rescissions Bill.

HISTORY

Public Law 104-19, the Rescission Act, was signed into law In July 1995. The Act requires that grazing permits, which expire prior to completion of NEPA analyses, be reissued based on existing terms and conditions. It also requires that NEPA analysis be conducted on all range allotments by 2010 and that new permits be issued unless there are significant environmental concerns.

The Coyote Allotment has been vacant since the last permittee vacated the allotment in 1991.

A new term grazing permit was issued for the Pine Mountain Allotment in 1998 based on a sale of adjacent private land, the base property on which the permit is based.

The Cinder Hill Permit expired on December 31, 2001 and an interim 10-year permit was issued pending decisions resulting from this analysis.

There is a need to comply with the provisions of P.L. 104-19, and specifically Section 504, to perform environmental analysis prior to issuing new permits.

There have been changes in vegetation structure and composition in both forest and rangeland areas since the early 1900s. Human use has also increased and changed during the same period.

Historically, low intensity fires maintained and thinned vegetative communities. They reduced fuel loadings and maintained diverse vegetation complexes resilient to catastrophic events. Historic fire cycles ranged from approximately 14 years in ponderosa pine forests to 35 years in shrub-steppe communities and 75 years in lodgepole pine forests. These cycles established and retained the characteristic open ponderosa pine stands in forested areas. They also served to maintain a highly diverse and complex shrub-steppe communities with a mosaic of grasses and shrub species with diversity in sizes and ages.

Fire suppression and control, implemented in the early part of the 20th century, has disrupted historic fire intervals. This has favored:

- the development of more dense stands of timber;
- an increase in the size and distribution of shrubs and shrub communities; and
- a decline in the quantity, quality and distribution of grasses and grass-dominated communities.

Such conditions have resulted in:

- increased fuel loadings;
- increased risk of catastrophic wildfire; and
- a reduction in community resiliency and resistance to disturbance.

The project area has seen an increase in the number of human caused fires. It has also seen an increase in the size and intensity of wildland fires. The Skeleton and Evans West fires in 1996, the 1988 Paulina Fire, and the 2003 18 Fire altered vegetation communities within the Cinder Hill Project Area.

Vegetation recovery through rest and reforestation activities has and continues to restrict livestock opportunities on the Cinder Hill and Coyote Allotments.

The 1988 Paulina Fire burned a small area within the Cinder Hill Allotment. In addition to changing both forest and shrub cover, it also eliminated the natural barrier, forest, that prevented livestock from leaving pasture 3 and trespassing into what is now the Newberry National Volcanic Monument.

The Skeleton fire burned approximately 17,789 acres of National Forest and private lands, including approximately 7,078 acres within pastures 1 and 6 of the Coyote Allotment. It removed much of the forest and shrub cover. It also destroyed most of the existing pasture fences. Rehabilitation work after the fire included the closure and obliteration of roads that provided access to water set sites. Fences destroyed or damaged by the fire or which have fallen into disrepair since the allotment was vacated have not been reconstructed. Grazing has not ocurred in the pasture or allotment since the permit was vacated in 1990.

The Evans West fire burned approximately 4,230 acres and most of the existing tree cover in Pasture 1 of the Cinder Hill Allotment. Much of the pasture was reforested to reestablish the forest that was lost in the fire. Livestock were removed from this pasture to protect the planted trees. Livestock would be permitted to return in 2006 when the planted trees have become established and have reached a height where grazing would be expected to have little or no impact.

The Evans West fire also destroyed much of the existing fence. The combination of the post-fire reforestation and the loss of fences reduced the number of pastures available for grazing from four (4) to three (3). The number of cow/calf pairs was reduced from 600 to 200.

The 18 Fire burned approximately 3,810 acres in July 2003. Approximately 98 percent of the burned acres, 3,717 acres, are located within the Coyote Allotment. The fire burned almost entirely within pasture 4. Small portions of pastures 5 And 6 were also burned. The fire killed much of the existing tree cover and existing shrub understory. It is expected that much of the burned forested area would be replanted.

Pasture 3 in the Cinder Hill Allotment has not been grazed since 1990 because there is no fence line along the west boundary. The boundary of the pasture and allotment was a lava flow that kept livestock inside the pasture. Creation of the NNVM in 1990 placed the lava flow inside the monument boundary. Grazing was also prohibited within the monument boundaries. Grazing has been prohibited in this pasture until a pasture and allotment fence is constructed.

The Coyote Allotment was vacated by the existing permittee in 1991. The permittee was concerned about increasing public use and the associated increase in conflicts between the public and livestock. He also

voiced concerns about the increasing development occurring along the north boundary of the allotment.

When grazing was initiated in the 1930's, there was little or no interaction between the public and livestock. Other uses, particularly recreational activities such as hunting, dispersed camping and off-highway vehicle (OHV) use, have increased over the past 30-40 years. Such activities have increasingly occurred in areas historically associated with livestock use.

Dispersed camping and OHV staging areas favor open sites with limited or no vegetation. These are characteristics common to livestock water sets. When livestock are not present, the open character makes them attractive to dispersed camping and OHV use. Regular use of some water set locations has resulted in the designation of those sites as OHV staging areas. This has resulted in the water set being closed and relocated to a new site. Additional conflicts arise when water sets are used by other users when livestock are present in the pasture.

Growth and development in the Bend area and on private lands immediately adjacent to the forest boundary have added an urban influence and usage to areas historically remote to and unaffected by development. The increasing development along the forest boundary has resulted in an increase in:

- the number of occurrences of fences being cut;
- gates being left open; and
- harassment of livestock by domestic dogs.

Increasing urbanization along the forest/allotment boundary has also increased the risk of large economic losses from wildfire damaging or destroying improvements. Fuels reduction treatments are increasingly being focused on wildland-urban interface areas. Recent research and operational trials suggest that grazing, particularly using sheep and/or goats, can be an effect tool in reducing fuel loadings and/or extending the effectiveness of other fuel reduction treatments.

Projects implemented during the past decade to reduce fuel loadings included 629 acres of prescribed burning and 1081 acres of mechanical mowing including 261 acres of mowing within the Coyote Allotment and adjacent to or near the wildland/urban interface. Experience with these activities suggests that vegetation recovery and treatment effectiveness decline after 5-10 years or more depending on the type of treatment. They require retreatment to maintain reduced fuel levels and reduced wildfire risks.

There are no perennial streams, lakes, ponds, springs or other open water sources within the project area. Water for livestock is provided by the permittee and delivered to water tanks by tank truck. Water sets are distributed at set distances within each pasture. They are located near or adjacent to system roads to provide access. Water sets are also located away from high public use areas and hidden by vegetation or terrain to minimize conflicts with other users. Placement of each water set allows the permittee to better distribute livestock and improve utilization of forage. Some pastures within the Coyote and Cinder Hill allotments have too few water sets for the terrain and distances livestock must travel between sets.

Post-fire rehabilitation activities in pasture 1 of the Coyote allotment closed and obliterated system roads that provided access to historic water set locations.

Approximately 70 percent of the project area, 62,766 acres, is in the MA-7, deer habitat, allocation of the LRMP. The goal of the MA-7 allocation is to "provide optimum habitat conditions on deer winter and transitional ranges while providing some domestic livestock forage …" (LRMP p 4-113). Standard and Guide M7-8 (LRMP p 4-114) states "Forage utilization by livestock will be maintained at a level so that sufficient forage is available to support the desired number of deer. Grazing systems, stocking levels, forage use standards, and

range improvement projects will be designed to be compatible with or complementary to the habitat objectives for deer."

The project area is located within the North Paulina Management Unit as designated by the Oregon Department of Fish and Wildlife (ODFW). This management unit has a target deer population of 5,500 animals.

Livestock target primarily forage species - grasses, forbs, etc. when grazing. Some livestock will also browse shrubs, including bitterbrush, the primary browse species of wintering mule deer. Mule deer are browsers and target primarily shrubs such as bitterbrush during the winter months.

PROPOSED ACTION

The proposed action proposes the following actions to meet the purpose and need:

- authorize grazing in the Coyote, Cinder Hill, and Pine Mountain allotments using 10-year term permits, temporary permits, and short-term contracts;
- split the Coyote allotment and establish a forage reserve for cattle, horses, sheep and goats in the western portion and name it the Bessie Allotment with four (4) pastures;
- combine the eastern portion of the Coyote allotment with the Cinder Hill allotment and rename as the Cinder Cone Allotment with seven (7) pastures;
- modify allotment boundaries in the Cinder Hill and Pine Mountain allotments;
- modify grazing activities to reflect current management direction and requirements;
- allow for the use of grazing, and specifically, the use of sheep and goats, to assist in the attainment of fuels management objectives;
- restore full stocking of livestock and complete utilization of all pastures in all allotments by the construction or reconstruction of approximately 30 miles of new fences and the reconstruction of approximately 12 miles of existing fences;
- remove approximately 20 miles of existing fences no longer needed including approximately 17 miles on the north (forest boundary) and west boundaries of the new Bessie allotment
- establish seven (7) new water sets in the new Cinder Cone Allotment to replace those closed after the Skeleton fire and to allow for better distribution of livestock and better forage utilization; and
- reopen three (3) currently closed and obliterated roads, totaling approximately one and one quarter (1.25),to provide access to proposed new water sets.

All activities would be conducted under 10-year term permits, short-term contracts or temporary grazing permits starting with the 2004 operating season and concluding at the conclusion of the 2013 operating season.

DECISION FRAMEWORK

The Forest Supervisor, Deschutes National Forest, will decide whether to reauthorize livestock grazing within the three allotments, and if so, whether to reauthorize livestock grazing on all or part of the three allotments. If that is the decision that is made, then she will decide whether to:

- modify the boundaries of the Coyote, Cinder Hill, and Pine Mountain Allotments;
- authorize the upgrade of existing improvements and the addition of additional improvements (fences and water sets); and
- modify grazing practices and permits for the three allotments to meet current management direction and requirements. This would include a determination of the amount, timing, and duration of livestock grazing activities.

The decision to graze or not graze will be made based on the following factors.

- Does it meet the requirements of the 1995 Rescission Bill.

- Is it consistent with the Deschutes National Forest Land and Resource Management Plan as amended.
- Are there serious environmental consequences associated with grazing identified in the analysis.

If the decision is made to continue grazing in one or more of the allotments, the decision of which grazing alternative to select will be based on the following factors:

- the effects of grazing on the availability of browse for wintering mule deer;
- the increasing levels of use and conflicts between grazing operations and other forest users, particularly in the wildland/urban interface (WUI); and
- the use of grazing to assist in managing fine fuels and extend the effectiveness of other fuels treatments to reduce the risk of wildfire.

PUBLIC INVOLVEMENT

PROCESS DESCRIPTION

Scoping and public involvement are ongoing processes used to invite public participation and to obtain input on the scope of the analysis, alternatives to be evaluated, and issues to be addressed.

The scoping process for this analysis was initiated in December 7, 2001. Letters were sent to 150 individuals, organizations, and other governmental agencies and published in **The Bend Bulletin**. The letter included the proposed action, management summaries, and preliminary issues and concerns associated with these allotments and requested input on the proposal to issue new grazing permits for these allotments.

The project was also published in the ***Schedule of Projects for the Ochoco and Deschutes National Forests and the Prineville District of the Bureau of Land Management*** (SOP) starting with the Summer 2001 issue. The SOP has been mailed quarterly to approximately 3,200 individuals or organizations. It was also posted on the combined Deschutes and Ochoco National Forests and Crooked River National Grasslands website (www.fs.fed.us/r6/centraloregon/index-sop.html). Seven letters and two phone calls were received in response to scoping efforts.

Issues raised as a result of scoping included:

- concerns relating to vegetative conditions being outside the range of natural variability;
- livestock grazing on public lands;
- conflicts between livestock grazing and recreational uses and wildlife habitat needs;
- increasing safety concerns and risk of accidents associated with increasing numbers and types of motorized vehicles and recreational users (horses, mountain bikes, OHVs etc.);
- the effects of livestock grazing on sensitive species;
- OHV use and developed recreation areas;
- reforestation efforts;
- maintenance and construction of range improvements in relation to the costs to the government;
- noxious weeds;
- the impact on soils; and
- the impacts from adjacent private and public lands.

KEY ISSUES

Based on a review of preliminary issues and concerns raised during the scoping process, four issues were determined to be key issues. These issues were used to develop alternatives to the proposed action. and are discussed in the environmental consequences section.

ISSUE 1

Vegetative conditions within the Cinder Hill Project area are outside the range of natural variability. This has resulted in higher fuel loadings and larger, more intense wildfires.

Prior to Euro-American settlement, much of the project area was characterized by shrub-steppe communities with scattered individuals and pockets of trees. Disturbance agents, particularly wildfire, played a major role in the types and distributions of vegetation on the landscape. Wildfires controlled the type, quantity, and distribution of fuels on the landscape and thereby limited the size and intensity of such fires.

Initiation of fire control and suppression in the early 1900s eliminated the role of this change agent across the landscape. Increased fuel loadings and uniform vegetation communities have resulted in increasingly intense and large wildfires. Fuels management activities have used mowing and prescribe fire to reduce fuel loadings and reduce fire intensity. Research and recent efforts to use sheep and goats to reduce fuel loadings and subsequent wildfire intensity and size suggest that grazing is a potential tool to reduce fuel loadings, increase the effectiveness of fuel treatments, and subsequent fire intensities.

This issue is addressed by Alternative 2 – Proposed Action and to a lesser extent in Alternative 4 – Gradual Grazing Reduction and Alternative 1 – Current Management. It is not addressed by Alternative 3 – No Grazing.

Measurement Standards

- Acres grazed.
- Acres available for grazing by sheep and goats adjacent to the wildland-urban interface.

ISSUE 2

Grazing should be reduced or eliminated on public lands.

Grazing is perceived by some segments of the public as inappropriate on public lands. They cite impacts to water quality, fish and wildlife habitat, recreational resources and users, impacts to soils, and impacts on sensitive species. They contend that the low fees paid by the permittees constitutes a public subsidy to a private business.

The decision to graze public lands is a policy decision made by Congress through legislation and implemented by regulations promulgated by the Washington Office of the Forest Service.

Grazing is specifically permitted by the Deschutes National Forest Land and Resource Management Plan (LRMP) (1990). Grazing is permitted in all land allocations within the project area.

This issue is addressed by Alternative 3 – No Grazing, and to a lesser extent by Alternative 4 – Gradual Grazing Reduction. It is not addressed by 1 – Current Management or Alternative 2 – Proposed Action.

Measurement Standards

- Number of acres closed to grazing.
- Number of acres open and available for grazing.
- Number of permits.

ISSUE 3

Grazing of livestock, particularly cattle, creates conflicts with wildlife, particularly mule deer and sage grouse.

Approximately 70 percent of the project area is MA-7, deer winter range. Livestock, particularly cattle, feed primarily on forage species – grasses, forbs, etc., but do and will occasionally browse shrubs such as bitterbrush. Browsing by cattle has the potential to reduce the quantity, quality, and distribution of browse that would be available during winter months when deer feed is limited by snow and other factors. Livestock are permitted to browse up to 50 percent of the new growth on shrub species (LRMP pages 4-51 & 4-64).

Historic sage grouse habitat is present in all three allotments in the Cinder Hill project area. Nesting and brood rearing is documented on Pine Mountain in the Pine Mountain Allotment. During nesting season, livestock may trample nests or forage on vegetation important for nesting hens and young.

This is addressed in all alternatives. In Alternative 3 – No Grazing, it is addressed by removing all livestock. In the other alternatives, it is addressed by monitoring utilization and stubble heights and moving livestock when stubble height objectives are met. In Alternative 1, it is also addressed by leaving the Coyote Allotment vacant.

Measurement Standards

- Acres of MA-7, deer winter range, open to grazing.
- Acres of historic sage grouse habitat available for grazing.

ISSUE 4

Increasing recreational activity is resulting in an increasing range of vehicle types and sizes. Such use is resulting in increasing risks of accidents and conflicts between grazing operations and other forest users.

The Coyote Allotment was vacated in 1991 by the permittee because of increased vehicle traffic on Forest Road 18 and increased harassment of livestock associated with increased urbanization along the forest boundary and recreational use.

Water sets, because of their proximity to roads and open character, are inviting for dispersed camping and OHV staging areas. Several have been converted to dispersed camping sites or OHV staging areas and the water set relocated to reduce or eliminate conflicts during common use periods.

The Road 25 OHV Staging Area is less than one half mile from the water set on Forest Road 2500 800. Livestock trailing to the water set create trails through the staging area. Livestock congregating at the water set create hazards for vehicles entering or leaving the staging area.

Facilities at developed recreation sites such as designated OHV staging areas or at popular cave sites such as the Arnold Ice Cave may be damaged by livestock rubbing or scratching. Livestock trailing or congregating in those areas intimidate visitors, raise dust, and leave piles of manure.

Roads provide livestock an easy path to move from place to place. Roads are also experiencing increasing levels and types of use ranging from horses to mountain bikes to OHVs to heavy trucks such as water and log trucks. Many visitors are unaccustomed to the variety of vehicle types, the great variation in speeds, or the presence of livestock.

This issue is addressed by all alternatives to varying degrees by closing or allowing to remain vacant all or portions of each allotment for varying periods of time.

Measurement Standards

- Miles of roads open to motorized vehicles.
- Acres open to grazing of cattle.

OTHER CONCERNS

Impacts of grazing on soils.
Livestock congregating at water sets coupled with trucks delivering water results in the loss of vegetation, compacted soils, and wind erosion. Hoof action associated with grazing breaks up soil crusts.

Conflicts between livestock grazing and recreational uses and wildlife habitat needs
The Coyote allotment was vacated in part because of increasing conflicts between livestock and increasing recreational use, particularly OHV activities and recreational traffic on Forest Road 18. They are addressed in all alternatives. It can be measured by:

- the number of acres grazed within deer winter range;
- miles of designated OHV trails within allotments; and
- acres open to unrestricted OHV use.

Increasing safety concerns and risk of accidents associated with increasing numbers and types of motorized vehicles and recreational users (horses, mountain bikes, OHVs etc.)
It is outside the scope of the analysis.

Effects of livestock grazing on sensitive species
Effects of management actions on sensitive species within a project area must be evaluated for all alternatives. It is addressed in all alternatives.

OHV use and developed recreation areas
OHV users and dispersed campers often use water set locations for staging and camping areas. Conflicts arise when recreational activities occur during periods when the water set is active. Conflicts also arise when livestock invade developed recreational sites such as campgrounds. This is addressed in alternatives 2 and 4. This can be measured by the number of water sets adjacent to designated OHV trails and by the number of developed recreational sites within each allotment.

Noxious weeds
The Forest Service, by regulation, is required to address noxious weeds and invasive plants. There are existing contract provisions in service and timber sale contracts to minimize the risk of introducing and spreading populations of such species. New grazing permits would also include provisions that would reduce or eliminate the risk of importation or transportation of such species to new locations. This is addressed in alternatives 2 and 4. This can be measured by the number of acres of disturbed ground associated with grazing.

Impacts on soils
Livestock, particularly when concentrated in small areas such as water sets, trample and destroy vegetation and expose soils to erosion. Soils may also be compacted by the hooves of livestock. This is addressed in all alternatives. This can be measured by the number of water sets and the number of acres of soils detrimentally impacted.

Impacts from adjacent private and public lands.
The Coyote allotment was vacated in 1992 in part due to increasing recreation use and traffic on Forest Road 18 and increasing urbanization and associated problems along the north boundary of the allotment. This is addressed in alternatives 2, 3, and 4 and partially in alternative 1. This can be measured by the number of allotments adjacent to development (subdivisions) and the miles of fence lines bordering subdivisions.

Vegetative conditions being outside the range of natural variability.
This issue is outside the scope of the project. Vegetation treatments to move vegetation conditions to within the range of natural variability are not proposed for this project.

Impacts of grazing on heritage resources.
Effects on heritage resources are considered under all alternatives.

Reforestation efforts
Reforestation efforts were initiated after both the Skeleton and Evans West fires in 1996. Grazing was excluded from pasture 1 in the Coyote allotment and pasture 1 of the Cinder Hill allotment until 2006 or until the replanted trees reached a size sufficient to withstand grazing. It is addressed in alternatives 1, 2, and 4.

Maintenance and construction of range improvements in relation to the costs to the government.
It is outside the scope of the analysis. All improvements proposed and implemented to permit grazing are performed and paid for by the permittee. The government may participate by providing some materials or assistance but this is not required. This is addressed in alternatives 1, 2, and 4.

CHAPTER 2 DESCRIPTION OF ALTERNATIVES INCLUDING THE PROPOSED ACTION AND NO GRAZING

This section provides a discussion of a no action (no grazing) alternative and three action alternatives. It also briefly discusses any other alternatives that were considered and the reasons they were eliminated from further analysis.

Alternatives Considered but Dropped from Further Analysis

No additional alternatives were developed or considered for this analysis.

Alternatives Considered in Detail

This section presents a detailed discussion of the alternatives responding to the "Purpose and Need" that are considered reasonable and viable by the Decision Maker (Supervisor, Deschutes National Forest). All alternatives, except the No Action (No Grazing) Alternative, are designed to move toward the desired condition consistent with standards and guidelines of the LRMP.

ALTERNATIVE 1 – CURRENT PRACTICES

This alternative would not implement revised management practices or authorize new improvements in any of the three allotments. Existing term permits in the Cinder Hill and Pine Mountain Allotments would continue until a new environmental analysis reauthorized grazing and issue new term permits. A new environmental analysis would be required before a new term permit and grazing would be permitted in the Coyote Allotment.

There would be no changes in either allotment or pasture boundaries or sizes (Figure 3). There would be no change in the number of pastures in each allotment. Allotment management plans would not be updated. Current management practices within the Cinder Hill and Pine Mountain Allotments would continue without changes.

Permittees would not be authorized to construct new fences or other improvements; they would be permitted to maintain or reconstruct existing improvements, including fences, water sets, and cattleguards.

Actions specific to each allotment are described below.

Coyote Allotment

Under this alternative, the Coyote Allotment would not be divided (Figure 3a). Pastures 1, 2, and 3 would not be combined with the Cinder Hill Allotment. The allotment acreage would remain at 35,167 acres. The allotment would remain a six (6)-pasture allotment. There would be no reconfiguration of pastures. The allotment would remain a cattle and horse allotment; grazing of sheep and goats would not be allowed.

The allotment is currently vacant and would continue to be vacant under this alternative. The allotment would not be utilized as a "forage reserve" to provide backup pasture for other federal grazing permittees who lose pasture to events such as wildfire. Use of sheep, goats or other livestock to manage vegetation or to extend the effectiveness of fuel reduction treatments would not be permitted.

The existing allotment management plan (AMP) allows 450 head of livestock. The grazing season extends from May 24 to October 10 each year. Grazing of cattle or horses would not be permitted in the allotment unless approved by another environmental analysis.

The 1996 Skeleton Fire resulted in the closure of Pasture 1 to grazing. Grazing, if authorized by a new environmental analysis, would be permitted in 2006 or when planted trees were determined to be large enough to withstand damage caused by livestock..

The current Coyote Allotment has 21 historic water sets totaling approximately 21 acres. All would remain. No temporary water sets/bedding areas for sheep and goats would be established. No closed roads would be reopened to provide access to water sets.

The Coyote allotment contains 11 road cattleguards. None would be removed or relocated. There are currently no OHV cattleguards within the allotment boundaries.

The allotment contains approximately 38 miles of existing fence lines. Because the allotment has been vacant for over 10 years, all are in some form of disrepair and require varying levels of maintenance. This alternative would not allow for the repair, maintenance or reconstruction of existing fence lines nor the construction of new fence lines to restore pasture boundaries or reconfigure pastures. No mowing of

Figure 3 Allotment Boundaries, Cinder Hill Project Area

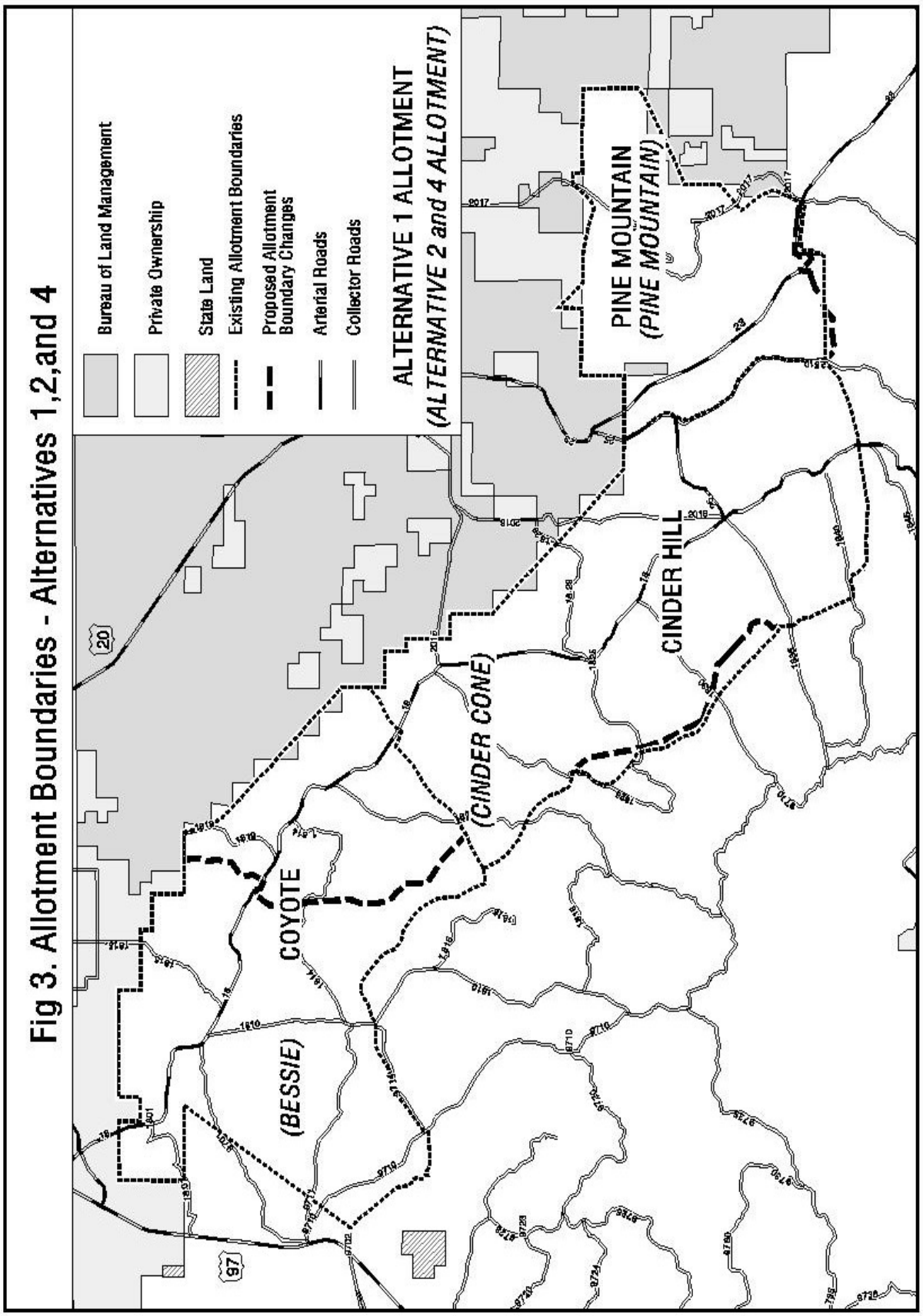
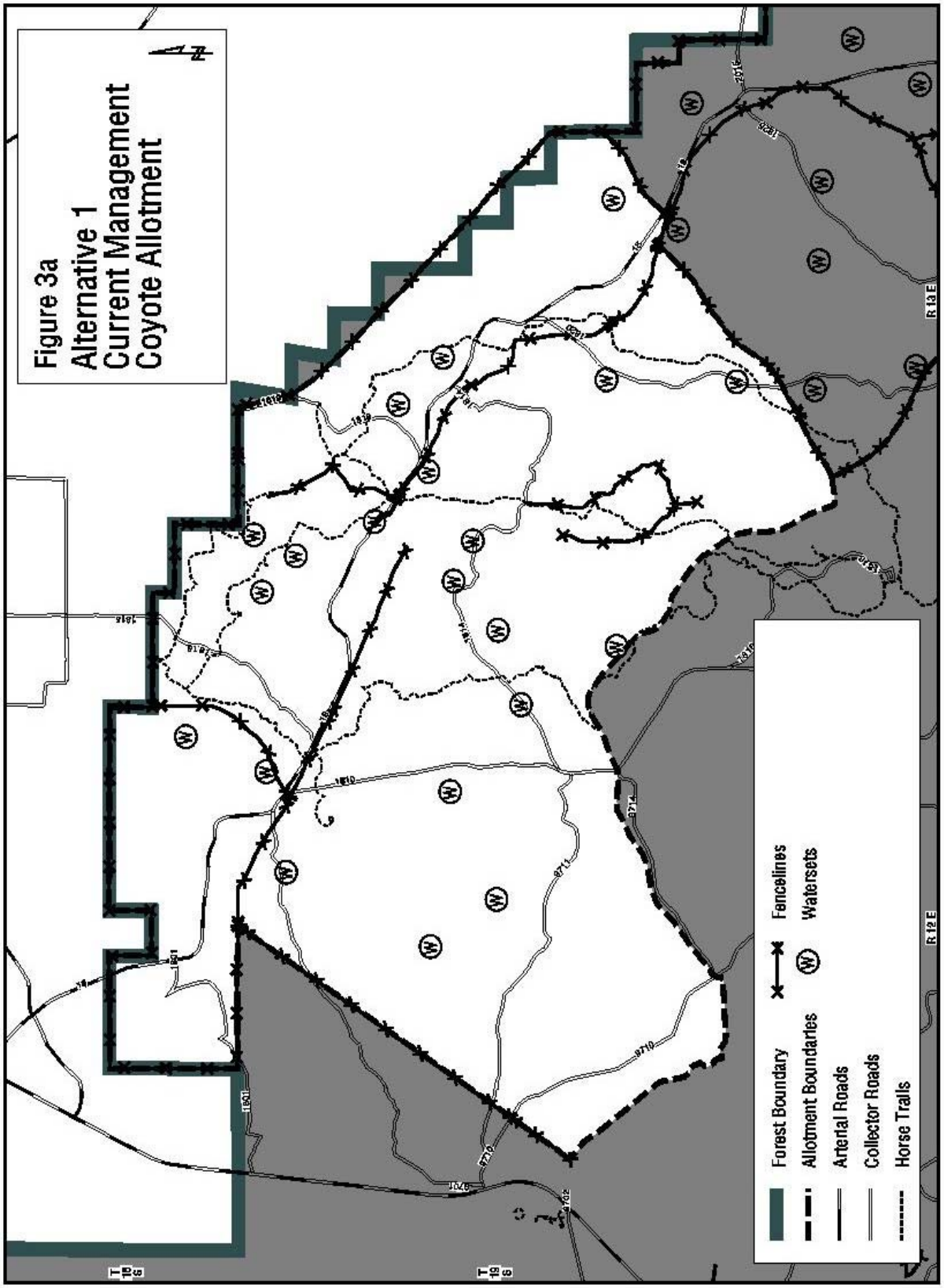


Figure 3a Coyote Allotment, Alternative 1



vegetation for fence construction would be done.

New horse gates, four (4) foot wide horse/hiker type, would not be constructed on Trail 61. No additional wire gates would be needed where fences cross roads.

As there are no active grazing permits in the allotment, use of off highway vehicles (OHV) to herd livestock or perform fence maintenance would not occur. Should subsequent environmental analysis and decision authorize grazing in the future, OHV use by the permittee would follow existing OHV rules for the area, including the use of designated roads or trails. Use of OHVs along fences would be permitted under the terms of the permit.

The existing allotment contains one study enclosure and 10 trend plots. The study enclosure would remain under this alternative. The trend plots are utilized to monitor the trends and conditions of range vegetation. This alternative would not change the number or location of the plots. They would continue to be periodically monitored.

Cinder Hill Allotment

The existing Cinder Hill Allotment currently contains 37,130 acres in five (5) pastures (Figure 3b). Under this alternative, there would be no change is the size of the allotment or in the number of pastures. The eastern portion of the Coyote Allotment, pastures 1 and 2, would not be combined with this allotment. Neither the allotment nor the pastures would be renamed.

Grazing would continue in this allotment under the current 10-year term permit. Upon termination of the permit, additional environmental analysis would be required to reauthorize grazing and issuance of a new term permit. The current AMP would continue to be used and would allow the grazing of 266 head of livestock between May 15 and September 15. Three (3) pastures, pastures 2, 4 and 5, would be the only pastures grazed. Pasture 1 would not be grazed until 2006 or until the trees planted after the Evans West Fire reach a size sufficient to resist damage from grazing. This would result in an increase in the number livestock allowed to 300. Pasture 3 would not be grazed until a new pasture/allotment boundary fence was constructed along the west boundary of the pasture. This would require additional environmental analysis and decision.

The current allotment has 37 historic water sets totaling approximately 37 acres. No new water sets would be added and no historic water sets would be discontinued.

The existing allotment contains 17 road cattleguards. No new road cattleguards are proposed and none would be removed.

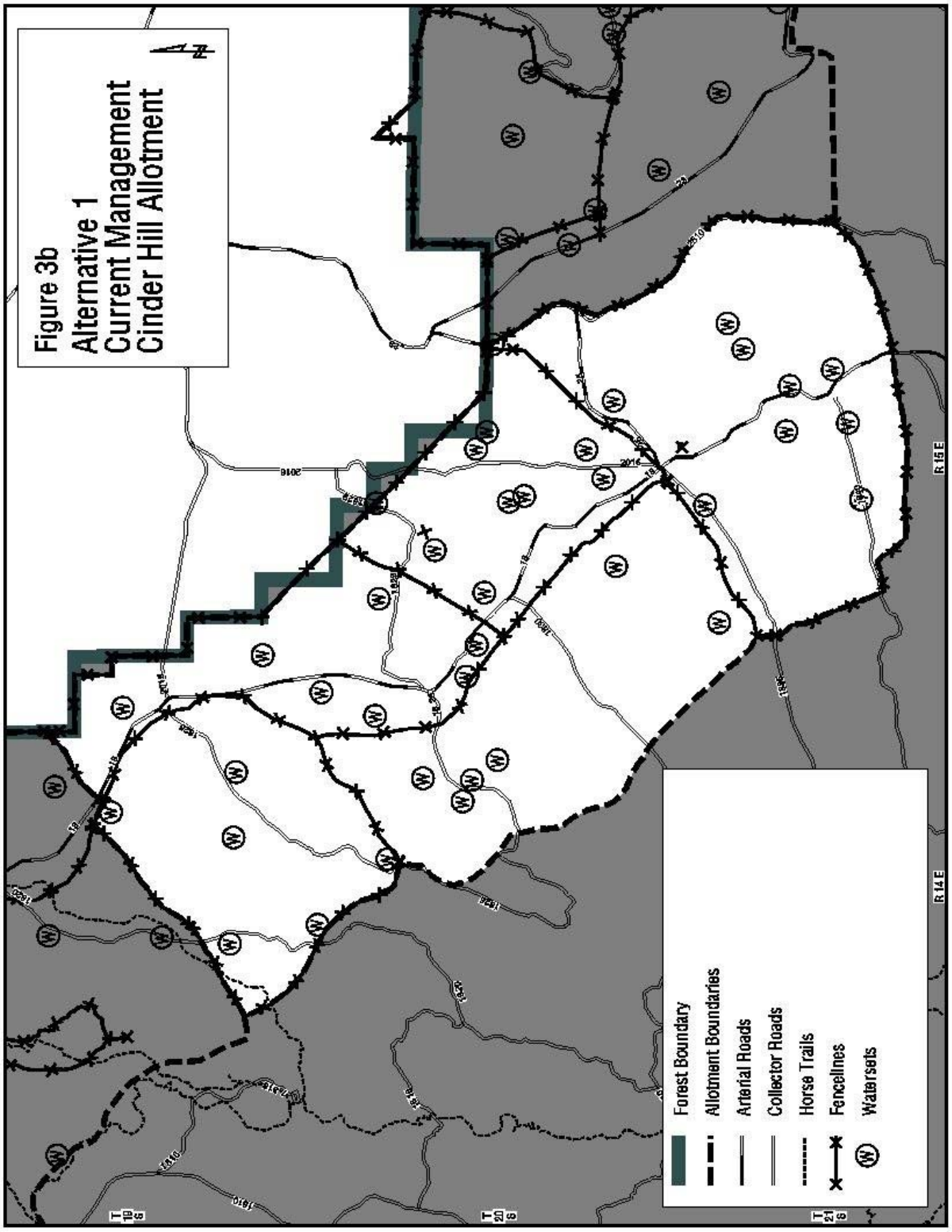
There are currently 30 OHV cattleguards located within the proposed allotment boundaries. All are located within the boundaries of the East Fort Rock OHV area that overlaps all of the current Cinder Hill Allotment. No additional OHV cattle guards would be required under this alternative.

This allotment currently contains approximately 44 miles of existing fence lines. No new fence lines would be constructed and no vegetation would be mowed. The lack of new fence construction would prevent pasture 3 from being grazed. Approximately five (5) miles of fence damaged by the Evans West fire would not be reconstructed without additional environmental analysis. This would potentially prevent pasture 1 from being grazed after 2006. Not constructing a new fence line along the west boundary of pasture 3 would result in no change in the number of acres in the pasture (8,821) or acres in the allotment (37,130).

This alternative would not remove two existing fence line segments totaling approximately three (3) miles. The largest segment, approximately two (2) miles in length, is located in T19S R13E Sections 20 and 29. The second, less than one (1) mile in length, is located in T19S R13E Sections 22 and 27.

No horse/hiker style horse gates would be required where horse trails intersect with

Figure 3b Cinder Hill Allotment, Alternative 1



fence lines as neither new nor reconstructed fence lines would be permitted. No additional wire gates would be required where fences cross system roads. Permittees would be permitted to use off – highway vehicles (OHVs). Use would follow OHV rules for the area. In general, permittees would be allowed to use OHVs to construct, repair and maintain improvements and travel using designated routes including trails and designated roads. Herding of livestock by OHVs off designated routes would not be permitted.

The existing allotment contains two (2) study enclosures and 10 trend plots. Under this alternative, the study enclosures would remain. This alternative would also not change the numbers or location of the trend plots. These would continue to be periodically monitored.

Pine Mountain Allotment

This alternative would retain the current allotment size, approximately 17,023 acres; configuration, four (4) pastures; and existing allotment boundaries (Figure 3c). There would be no changes in the allotment or pasture names. The allotment would remain a cattle and horse allotment.

Grazing would continue in this allotment under the current 10-year term permit. Upon termination of the permit, additional environmental analysis would be required to reauthorize grazing and issuance of a new term permit. The current AMP would not be revised. Livestock stocking levels would remain at 500 head with a grazing season from May 15 to October 25.

This allotment has 12 historic water sets occupying approximately 12 acres. No existing water sets would be discontinued; 12 existing water sets would continue to be used. No new water sets would be established. This allotment has four (4) existing water structures; three (3) trick tanks and one (1) livestock tank. None would be removed and none repaired.

The allotment contains 7 road cattleguards. The cattleguard on Road 23 in T21S R15E Section 17 would not be removed and relocated. No new cattleguards would be installed.

There are currently four (4) OHV cattleguards located within the proposed allotment boundaries. All are located within the boundaries of the East Fort Rock OHV area that overlaps only the Coop Pasture of this allotment. No new OHV cattleguards would be required.

This allotment currently contains approximately 26 miles of existing fence lines. No new fence lines would be constructed. A fence would not separate the South and Coop pastures. The population of pumice grape fern (*Botrychium pumicola)* (BOPU) population in the south corner of the South Pasture would not be fenced to exclude cattle from grazing through the site. No mowing of vegetation would occur.

Approximately 0.1 mile of existing fence line in T20S R15E Section 31 would not be removed.

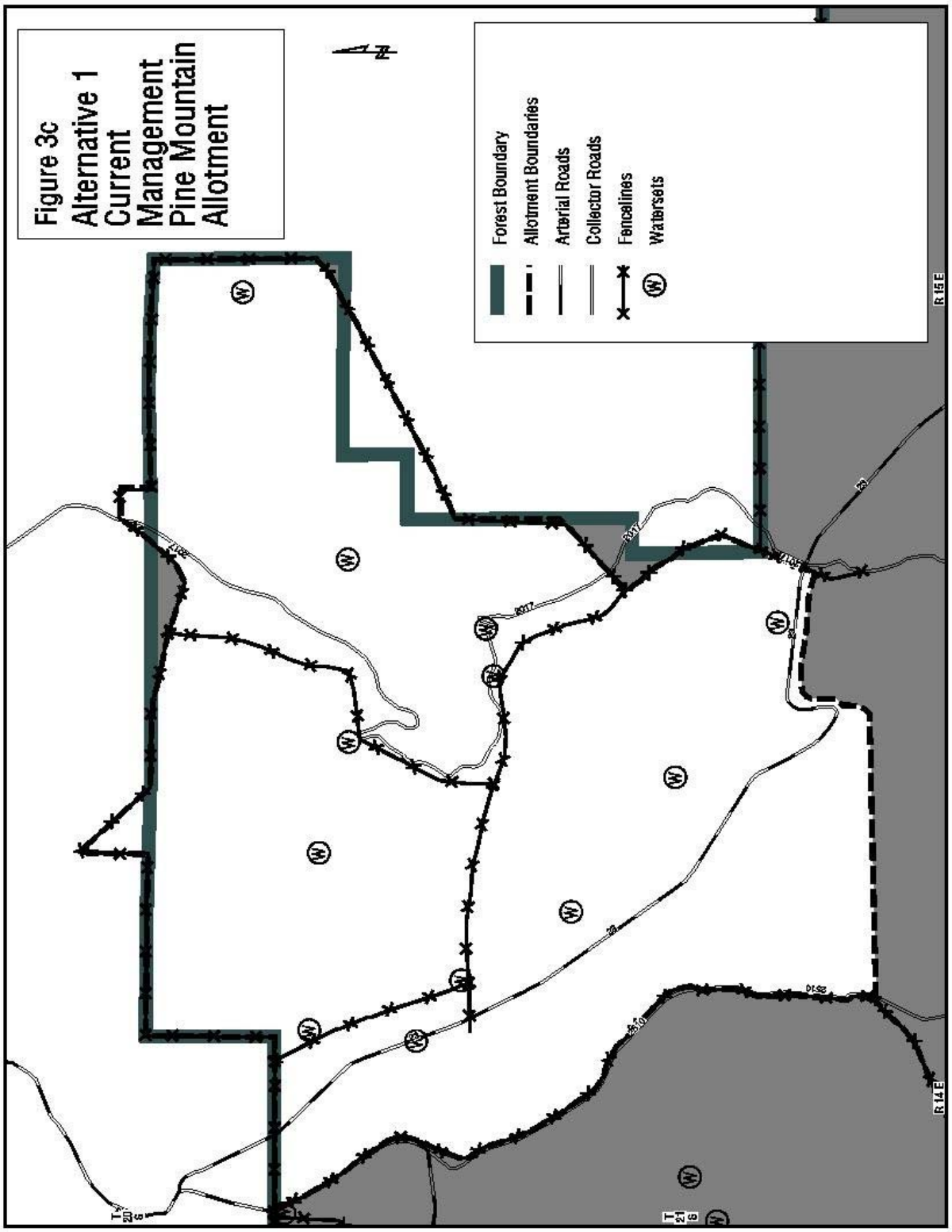
There would be no realignment of the south boundary. Neither the allotment acreage nor the acreages for the Coop and South Pastures would change.

No new wire gates on roads would be required. No horse gates would be required.

Permittees would be permitted to use off – highway vehicles (OHVs). Use would follow OHV rules for the area. In general, permittees would be allowed to use OHVs to construct, repair and maintain improvements and travel cross country using designated routes including trails and designated roads. Herding of livestock by OHVs off designated routes would not be permitted.

The existing allotment contains no study enclosures and seven (7) trend plots. Under this alternative, no study enclosures are proposed. This alternative would also not change the numbers or location of the trend plots. These would continue to be periodically monitored.

Figure 3c Pine Mountain Allotment, Alternative 1.



ALTERNATIVE 2 – PROPOSED ACTION

It would authorize permittees to construct, maintain or improve improvements to control the movement and distribution of livestock. Allotment management plans (AMP) would be updated for each allotment. Construction of new fence lines would reconfigure pastures in the Coyote Allotment, allow for full utilization of the Cinder Hill Allotment and change allotment boundaries in the Coyote, Cinder Hill and Pine Mountain Allotments.

This alternative would divide the current Coyote Allotment into two parcels. The eastern parcel, including pastures 1, 2 and a portion of 3, totaling approximately 10,710 acres, would be combined with the Cinder Hill Allotment. The western portion, totaling 24,457 acres and including pastures 4, 5, 6, and the remainder of 3, would be retained as an allotment and redesignated as the Bessie Allotment with four (4) pastures.

Actions specific to each allotment are described below.

Coyote Allotment

This allotment would be divided into two parcels with the eastern portion, including pastures 1, 2 and 3 and totaling 10,710 acres, would be combined with the existing Cinder Hill Allotment. The remaining 24,457 acres would be redesignated as the Bessie Allotment (Figure 4a). Existing pastures 4, 5, 6 and the remainder of 3, would be reconfigured into four new pastures: North, South, East and West. The allotment designation would be changed from cattle and horse only to include sheep, goats and other livestock.

Grazing within the new Bessie allotment would be under contract or temporary (generally one year) permit(s) only. This allotment would be utilized as a “grass bank” providing backup grazing pasture for National Forest grazing permittees who experience loss of pasture due to catastrophic events such as wildfire. Grazing in this allotment would also be utilized to extend the effectiveness of fuel reduction treatments such as mechanical mowing or prescribed burning. Grazing, particularly with sheep and goats, would also be utilized to manage vegetation within utility corridors (gas, powerline, etc.), road rights-of-way and other similar situations.

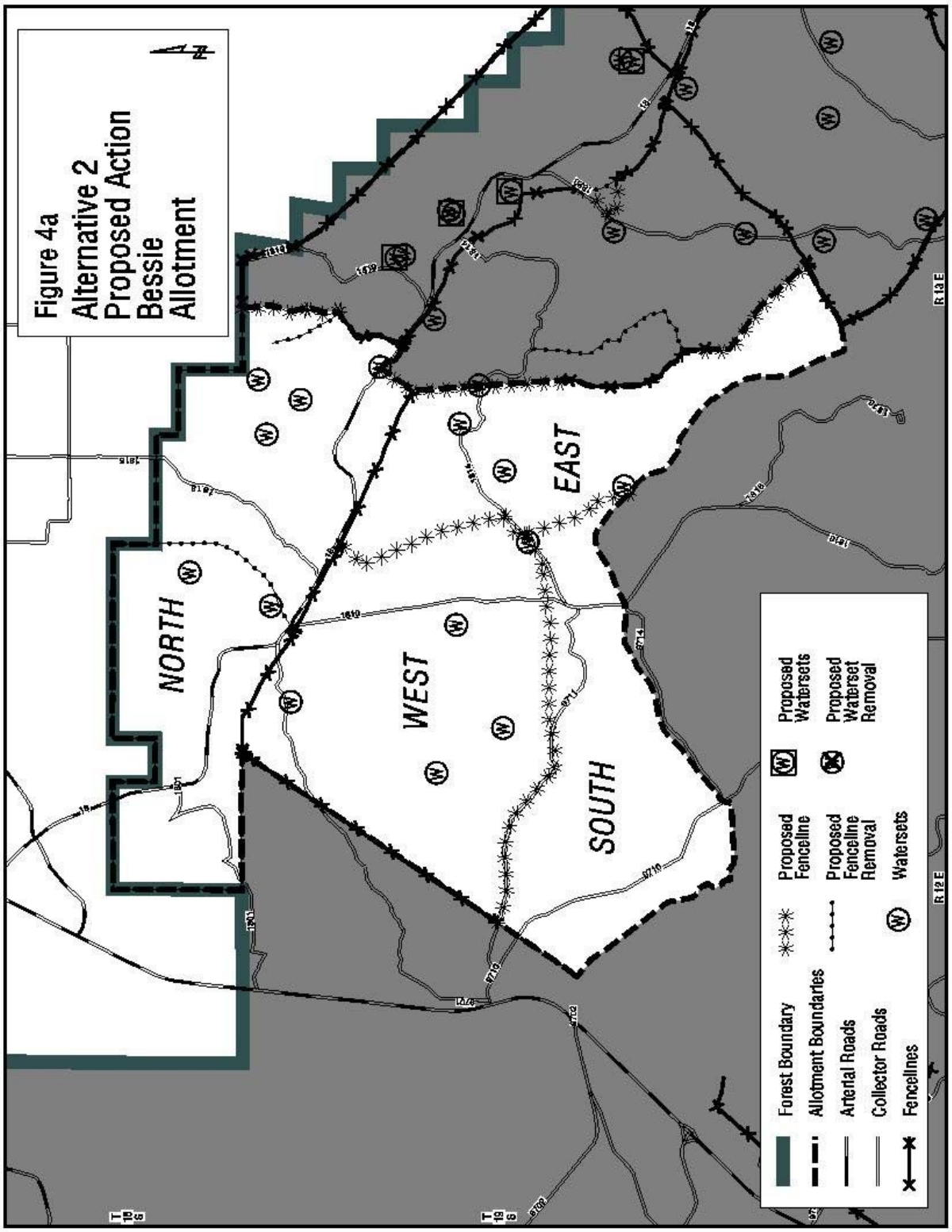
This alternative would reduce the number of cattle from the current 450 to 200. It would also allow the grazing of 700 sheep and/or 500 goats. The grazing season would extend from May 15 to July 31 for sheep and goats and from May 15 to September 15 of each year for cattle and horses. This is a decrease of 16 days from that allowed for cattle under the 1981 AMP. It is an increase of 77 days for sheep and goats. The maximum number of days grazing would be allowed during those periods would be 60. Sheep and goats would be permitted in all four pastures; cattle and horses would be restricted to the East and West pastures only. A rest-rotation grazing system would be used allowing one or more pastures to be “rested” each year if or when grazing within the allotment exceeded one season.

The current Coyote Allotment has 21 historic water sets totaling approximately 21 acres. One existing historic water set, approximately one (1) acre in size, would be discontinued; 15 existing water sets, totaling approximately 15 acres would continue to be used. The other six (6) historic sets, approximately six (6) acres total, are located within the eastern portion of the allotment proposed for alignment with the existing Cinder Hill Allotment. Up to seven (7) temporary water sets would be established in existing disturbed sites – utility corridors and cinder pits – for use when grazing sheep and/or goats. Such sites would also serve as bedding sites for sheep and goats.

The Coyote allotment contains 11 road cattleguards. One cattleguard, on Road 9710 in T19S R12E Section 19, would be removed and relocated on Road 1810 in T19S R12E Section 23.

There are currently no OHV cattleguards within the existing allotment. Development of a proposed OHV trail system within the

Figure 4a Bessie Allotment, Alternative 2.



Kelsey Planning Area, which overlaps much of the new Bessie Allotment, would require the placement of 13 OHV cattleguards on proposed OHV trails which cross existing or proposed new fence lines.

The Coyote allotment currently contains approximately 38 miles of existing fence lines. The realigned Bessie Allotment would retain approximately 17 miles of those existing fence lines. These lines, currently in disrepair due to the lack of maintenance resulting from the allotment being vacant since 1991, would be reconstructed or repaired. Approximately 17 miles of existing fence lines, the majority of which are located along the north (urban growth boundary) and west boundaries of the allotment, would be removed. The remainder, approximately three (3) miles, is located in T18S R12E Sections 35 and 36 and T19S R12E Section 2 (approximately 2.25 miles) and T19S R13E Section 5 (approximately three quarter mile). Approximately nine (9) miles of new fence line would be constructed, primarily to delineate the boundaries between pastures and restore fence lines destroyed by the Skeleton Fire in 1996. Fence construction would require mowing a strip eight (8) feet wide for the length of the proposed new fence lines (nine miles or approximately 1.1 acres). Vegetation within the strip would be mowed to a height of not less than 6-8 inches in height using a mower pulled behind either 85 HP John Deere 6400 rubber tired tractor or comparable or by a ASV Posi Track All Season Vehicle or comparable track-mounted vehicle. The permittee or grazing contractor would be responsible for all fence construction, reconstruction and fence maintenance. Upon completion of the contract or termination of the permit, all improvements, including fences, would be owned by the Government. The permittee or contractor would construct all proposed fences before grazing cattle or horses.

Sheep and/or goats would be allowed to graze without new fence construction. Both are herd animals and would be controlled with either temporary fences or by the use of herding animals such as dogs and/or on-site shepards.

In addition to the 13 cattleguards that would be needed for OHV trails proposed under the Kelsey Access EA, new fence construction would also require the placement of two (2) horse/hiker gates (4 foot width) where new fence lines cross existing horse trails (Trail 61). Both would be located on interior, pasture boundary fences; one between the East and West pastures and the other between the East and South pastures. The approximately nine (9) miles of new fence also would cross 10 existing system roads and require 10 additional wire gates to allow for the passage of vehicles using those roads.

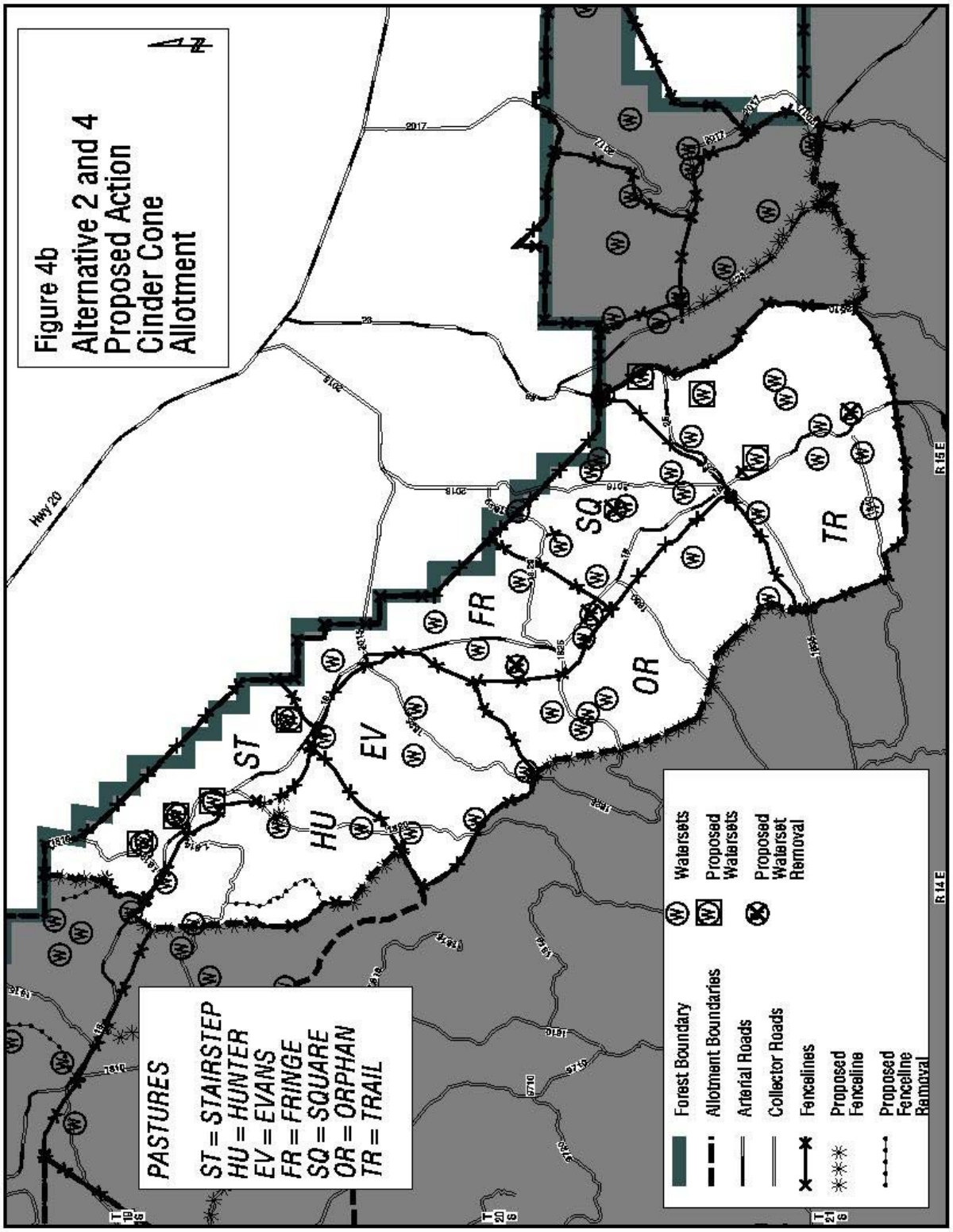
Permittees would be permitted to use off – highway vehicles (OHVs). Use would follow OHV rules for the area. In general, permittees would be allowed to use OHVs to construct, repair and maintain improvements and travel using designated routes including trails and designated roads. Herding of livestock by OHVs off designated routes would not be permitted.

The existing allotment contains one study enclosure and 10 trend plots. The study enclosure would remain under this alternative. The trend plots are utilized to monitor the trends and conditions of range lands. This alternative would not change the number or location of the plots. They would continue to be periodically monitored.

Cinder Hill Allotment

The existing Cinder Hill Allotment currently contains 37,130 acres in five (5) pastures. Under this alternative, this allotment would increase in size to 46,755 acres with the addition of pastures 1, 2 and 3 from the existing Coyote Allotment and the allotment boundary adjustment associated with the allotment fence in pasture 3. The number of pastures would increase from five to seven (7) as pastures 2 and 3 from the Coyote Allotment would be combined into a single pasture (Figure 4b). The new allotment would be named the Cinder Cone Allotment.

Figure 4b Cinder Cone Allotment, Alternatives 2 and 4.



Pastures would be renamed to Hunter, Evans, Fringe, Stairstep, South, Square, Trails and Orphan. The allotment designation would remain a cattle and horse allotment.

This alternative would authorize grazing within the allotment under 10 year term permits. It would authorize grazing 600 head of livestock, an increase of 334 head from the current 266 head between May 1 and September 22 each year. A rest-rotation grazing system would be used allowing one or more pastures to be "rested" (not grazed) each year.

Grazing was prohibited within pasture 1 of the Coyote Allotment (vacant since 1991) and pasture 1 of the Cinder Hill Allotment after the Skeleton and Evans West fires until either 2006 or until tree regeneration was sufficiently established to be largely unaffected by livestock grazing. This alternative would retain those restrictions in those pastures (new designations of Stairstep and Evans pastures respectively).

The current allotment has 37 historic water sets totaling approximately 37 acres. Combining this allotment with the east portion of the Coyote Allotment would add six (6) additional historic water sets totaling approximately six (6) additional acres. Eight (8) existing water sets, totaling approximately eight (8) acres, would be discontinued and would be rehabilitated by subsoiling and/or natural revegetation; 37 existing water sets would continue to be used. Seven (7) new water sets, totaling approximately seven (7) acres, would be established; four (4) within the boundaries of the new Stairstep pasture (Pasture 1 of the existing Coyote Allotment) and the other three (3) within the Trails pasture. The four (4) in the Stairstep pasture would replace water sets that have rehabilitated themselves since the allotment was vacated in 1991 and since the 1996 Skeleton Fire; the others to replace existing water sets and improve livestock distribution. Three (3) of these new water sets would require the reopening of three (3) road segments totaling approximately one and one quarter (1.25) miles of road that were closed and obliterated by subsoiling as part of the Skeleton Fire rehabilitation. The fourth new water set would be located adjacent to a current system road in an existing disturbed site currently used as a dispersed camp. No roads would be reopened for the three (3) new water sets proposed in the Trails pasture.

The existing allotment contains 17 road cattleguards. Combining pastures 1, 2 and 3 from the Coyote Allotment with the Cinder Hill Allotment would increase the number of road cattleguards to 20. No new road cattleguards are proposed.

There are currently 30 OHV cattleguards located within the proposed allotment boundaries. All are located within the boundaries of the East Fort Rock OHV area that overlaps all of the current Cinder Hill Allotment. New fence lines proposed along the west boundary of the Orphan pasture will require one (1) additional OHV cattleguard.

The existing allotment currently contains approximately 44 miles of existing fence lines. Adding pastures 1, 2 and 3 from the Coyote Allotment increases this to 63 miles of existing fence lines within the new, reconfigured Cinder Cone Allotment. This alternative would construct approximately 15 miles of new fence line. Approximately eight (8) miles of new fence line would be along the allotment boundary between this allotment and the reconfigured Bessie Allotment. The remaining seven (7) miles would be located along the west boundary of the Orphan pasture (Pasture 3, Cinder Hill Allotment) where there currently is no fence line. Fence construction would also require mowing an eight (8) foot wide strip the length of the new fence line using a mower pulled by either a John Deere rubber tired farm tractor or comparable or by a ASV or comparable track mounted vehicle. Vegetation would be reduced to a height of not less than 6-8 inches. All fence construction, reconstruction and maintenance would be the responsibility of the permittee. The Government would own all improvements

This alternative also proposes the removal of approximately three (3) miles of existing fence line in two segments. The largest segment, approximately two (2) miles in length, is located in T19S R13E Sections 20 and 29. The second, less than one (1) mile in length, is located in T19S R13E Sections 22 and 27.

Construction of the fence along the west boundary of the Orphan pasture would also result in a change in the allotment boundary by moving the boundary to the east. Current pasture 3 of the Cinder Hill Allotment is approximately 8,821 acres; construction of the fence and relocation of the allotment boundary would reduce this pasture to approximately 7,736 acres, a reduction of approximately 1,086 acres.

In addition to the one cattleguard required for OHV trails, new fence construction would also require the placement of four (6) horse/hike style gates (4 foot width) where new fence lines cross existing horse trails. Three (3) gates would be located on Trail 62 and on the boundary between this allotment and the new Bessie Allotment. The fourth gate, on Trail 63, would be located on the pasture boundary between the Hunter and Stairstep pastures. A fifth gate would be located at the forest boundary where the allotment boundary fence meets with the forest boundary fence line. The sixth gate would be located at the east end of the proposed fence line around the Arnold Ice Cave. The approximately fifteen miles of new fence also would cross 15 existing system roads and require wire gates to allow for the passage of vehicles using the roads. Six (6) of those gates would be located on the allotment boundary between this allotment and the new Bessie Allotment.

Permittees would be permitted to use off – highway vehicles (OHVs). Use would follow OHV rules for the area. In general, permittees would be allowed to use OHVs to construct, repair and maintain improvements and travel using designated routes including trails and designated roads. Herding of livestock by OHVs off designated routes would not be permitted.

The existing allotment contains two (2) study enclosures and 10 trend plots. Under this alternative, the study enclosures would remain. This alternative would also not change the numbers or location of the trend plots. These would continue to be periodically monitored.

Pine Mountain Allotment

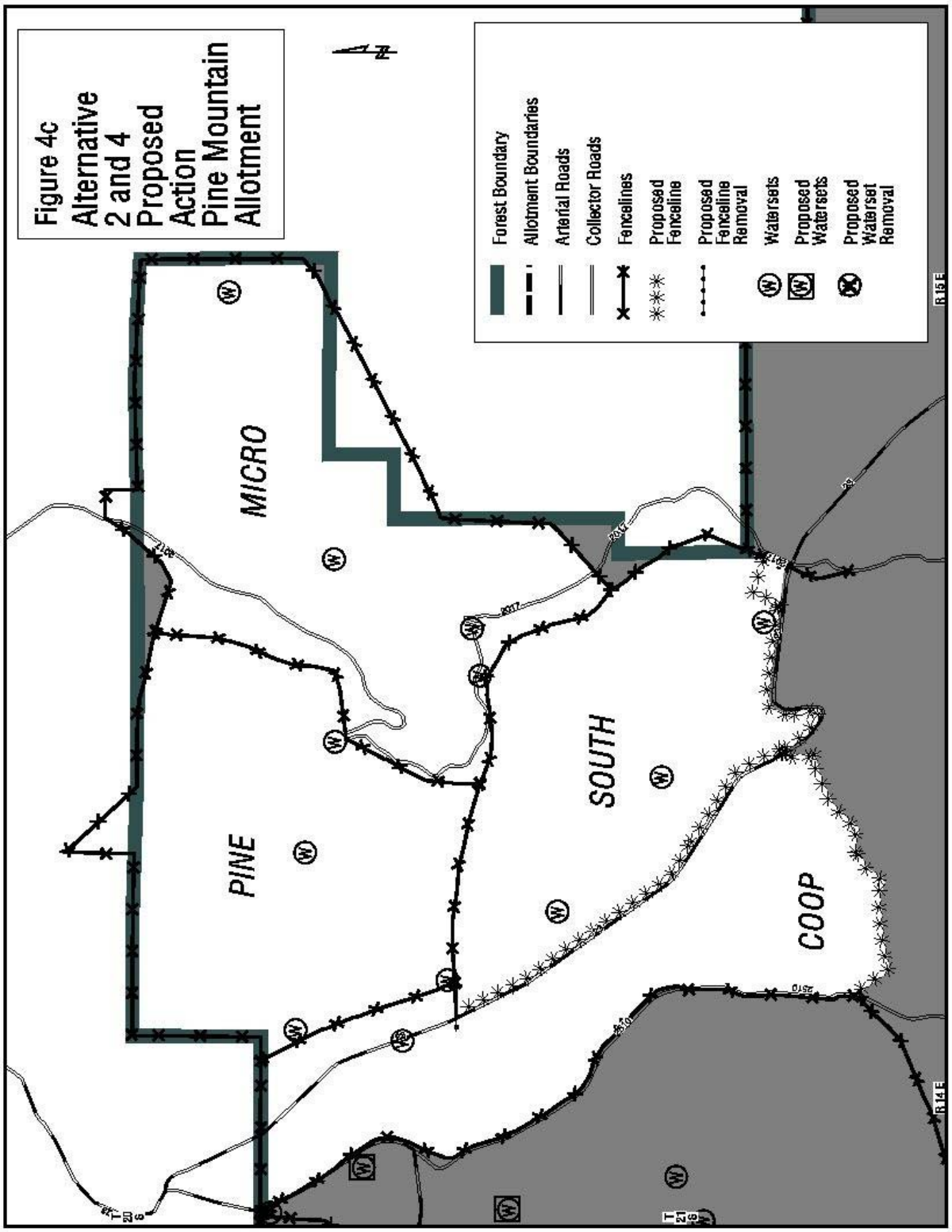
The existing Pine Mountain Allotment currently contains 17,023 acres in four (4) pastures. Under this alternative, this allotment would decrease in size to 16,813 acres due to changes in the allotment boundary on the south end of the Coop and South Pastures (Figure 4c). The number of pastures would remain at four (4). The allotment would retain its current name. Pastures would retain their current names: Micro, Pine, South and Coop. The allotment designation would remain a cattle and horse allotment.

This alternative would authorize grazing within the allotment under 10 year term permits. It would authorize continued grazing of 500 head of livestock between May 15 and September 30 each year. A rest-rotation grazing system would be used allowing one or more pastures to be “rested” (not grazed) each year.

This allotment has 12 historic water sets occupying approximately 12 acres. No existing water sets would be discontinued; 12 existing water sets would continue to be used. No new water sets would be established. This allotment has four (4) existing water structures; three (3) trick tanks and one (1) livestock tank. This alternative would remove one (1) dysfunctional trick tank and repair two (2) others.

The allotment contains 7 road cattleguards. One (1) existing cattleguard on Forest Road 23 in T21S R15E Section 17 would be removed and relocated further to the south on the same road where the proposed

Figure 4c Pine Mountain Allotment, Alternatives 2 and 4.



allotment boundary fence would cross the road. The construction of the new fence line along the south boundary of the allotment will require the placement of one (1) new cattleguard at the junction of Roads 2510 and 2510400 in T21S R14E Section 18.

There are currently four (4) OHV cattleguards located within the proposed allotment boundaries. All are located within the boundaries of the East Fort Rock OHV area that overlaps only the Coop Pasture of this allotment. The new fence proposed for the south boundary of the allotment would require five (5) new OHV cattleguards.

The existing allotment currently contains approximately 26 miles of existing fence lines. This alternative would construct approximately eight (8) miles of new fence line. Approximately four (4) miles would be built along the east side of Forest Road 23 and would separate the South and Coop pastures. The remaining approximately four (4) miles would be along the south boundaries of both the Coop and South pastures and would form the realigned allotment boundary. The realigned allotment boundary fence would also exclude cattle from the pumice grape fern population located in the south portion of the South pasture. Fence construction would also require mowing an eight (8) foot wide strip the length of the new fence line using a mower pulled by a rubber tired farm tractor. This would result in approximately one (1) acre of vegetation being mowed. Vegetation would be reduced to a height of not less than 6-8 inches. All fence construction, reconstruction and maintenance would be the responsibility of the permittee. The Government would own all improvements.

This alternative also proposes the removal of approximately 0.1 mile of existing fence line in T20S R15E Section 31.

Construction of the proposed fence along the south boundary of the allotment would also result in a realignment of the allotment boundary. Along the western third of the boundary, the new boundary would move south of the existing boundary; for the remainder of the distance, the line would be north of the existing boundary and also north of Forest Road 23. The allotment acreage would decrease by approximately 210 acres from the current 17,022 acres to 16,812 acres.

New fence construction would cross four system roads – 2300080, 2300100, 2300120 and 2300125. Each would require construction of a wire gate to allow vehicle passage. 2300125 is proposed for closure and obliteration or conversion to an OHV trail under several alternatives of the Opine Access EA which would eliminate one gate. No horse trails currently intersect proposed fence lines and therefore no horse/hike type gates are proposed.

Permittees would be permitted to use off – highway vehicles (OHVs). Use would follow OHV rules for the area. In general, permittees would be allowed to use OHVs to construct, repair and maintain improvements and travel using designated routes including trails and designated roads. Herding of livestock by OHVs off designated routes would not be permitted.

The existing allotment contains no study enclosures and seven (7) trend plots. Under this alternative, no study enclosures are proposed. This alternative would also not change the numbers or location of the trend plots. These would continue to be periodically monitored.

ALTERNATIVE 3 – NO GRAZING

This alternative is required to be considered under FSM 2210. It would not reauthorize grazing in any of the three (3) allotments. It would terminate the existing permits in the Cinder Hill and Pine Mountain Allotments. Permittees would be required to terminate all operations and remove all improvements within two (2) grazing seasons.

Range allotment designations would be removed, allotments would be closed and allotment management plans would be terminated.

No new fences would be constructed and no new water sets established. Existing water sets would be rehabilitated by either subsoiling and planting of native species or allowed to restore themselves through natural processes.

Actions specific to each allotment are described below.

Coyote Allotment

This allotment would not be divided and the eastern 10,710 acres would not be combined with the existing Cinder Hill Allotment.

The six (6) existing pastures in this allotment would be eliminated. There would be no realignment or reconfiguration of any pasture with adjacent allotments.

A forage reserve would not be established in the western portion of the allotment. No grazing would be permitted within the existing allotment boundaries. The area would be not utilized as temporary or replacement grazing by other federal grazing permittees impacted by wildfire or other events resulting in the loss of permitted grazing areas. Use of sheep and/or goats to manage vegetation and/or extend the effectiveness of fuel treatments would not be permitted without further environmental analysis associated with specific proposals.

This alternative would reduce the number of cattle from the current 450 to 0. This alternative would not permit the grazing of sheep or goats. There would be no grazing season.

Twenty-one (21) water sets, totaling approximately 21 acres, would be discontinued and rehabilitated by either subsoiling and planting with native vegetation or allowed to restore themselves through natural processes. No temporary water sets/bedding areas would be established for sheep or goats.

Eleven (11) road cattleguards would be removed. No new road cattleguards would be required. There are currently no OHV cattleguards present in the allotment. No new OHV cattleguards would be required if an OHV trail system is developed.

Thirty-eight (38) miles of existing fence lines would be removed. Approximately one-quarter (0.25) mile of existing fence line would be retained adjacent to other ownerships and grazing operations to prevent trespass of livestock onto National Forest lands. Eight (8) miles of proposed new fence line would not be constructed and approximately one (1) acre of vegetation would not be mowed to permit fence construction. No temporary fences or herding animals or shepards would be required.

No new horse/hiker type gates or wire gates would be required. Approximately 38 existing wire gates on system roads would be removed when fences were removed. OHV use would be permitted to remove improvements. Use would be restricted to improvement corridors (fence lines) or improvement sites. OHV use away from improvement sites/corridors would follow OHV rules for the area.

The existing allotment contains one study enclosure and 10 trend plots. The study enclosure would remain under this alternative. The trend plots are utilized to monitor the trends and conditions of range lands. This alternative would not change the number or location of the plots. They would continue to be periodically monitored.

Cinder Hill Allotment

10,710 acres of pastures 1, 2 and 3 of the existing Coyote Allotment would not be combined with the existing Cinder Hill Allotment. The five (5) pastures in the Cinder Hill Allotment would be eliminated.

The number of cattle allowed to graze on the three (3) currently available pastures would drop from 266 to zero (0). There would be no increase to 600 head. Renewal of grazing in pasture 1, scheduled for 2006, would not occur.

Thirty-seven (37) historic water sets, totaling approximately 37 acres, would be

rehabilitated by either subsoiling and planting with native vegetation or allowed to restore themselves through natural processes. Seven (7) new water sets would not be established. Three (3) currently obliterated road segments, totaling approximately 1.25 miles, would not be reopened.

Seventeen (17) road cattleguards would be removed.

Thirty (30) existing OHV cattleguards would be removed. No new OHV cattleguards would be required for existing OHV trails.

Forty-four (44) miles of existing fence lines would be removed. Fifteen (15) miles of new fence line would not be constructed and approximately 1.8 acres of vegetation would not be mowed to construct those fence lines. Approximately 14 miles of fence line along adjacent property ownerships would not be removed to prevent livestock from trespassing onto National Forest lands.

Six (6) horse/hiker type gates, required where fences cross horse trails, would not be constructed. Fifteen (15) wire gates, needed where fences cross system roads, would not be required.

OHV use would be permitted and users would be required to follow OHV rules for the area. OHV use would be permitted to remove existing improvements.

The existing allotment contains two (2) study enclosures and 10 trend plots. Under this alternative, the study enclosures would remain. This alternative would also not change the numbers or location of the trend plots. These would continue to be periodically monitored.

Pine Mountain Allotment

The number of cattle permitted to graze this allotment would decrease from 500 head to zero (0). The existing four pastures would be eliminated.

Twelve (12) existing water sets, totaling approximately 12 acres, would be rehabilitated by subsoiling and/or natural revegetation. No new water sets would be established. Three (3) existing trick tanks would be removed; one (1) existing wildlife guzzler would be retained.

Seven (7) existing road cattleguards would be removed. No new road cattleguards would be constructed.

Four (4) existing OHV cattleguards would be removed. No new OHV cattleguards would be constructed.

Approximately eight and one half miles (8.5) of existing fence line would be removed. Approximately 17.5 miles of existing fence lines which border other property ownerships and grazing operations would not be removed to prevent trespass of livestock onto National Forest Lands. Eight (8) miles of new fence line would not be constructed. Approximately one (1) acre of mechanical mowing would not be required to construct new fence lines.

No new wire gates would be required. Approximately 10 wire gates on non-border fences which cross system roads would be removed; wire gates on border fences that would not be removed would remain.

OHV use would be permitted and users would be required to follow OHV rules for the area. OHVs would be permitted to remove existing improvements.

The existing allotment contains no study enclosures and seven (7) trend plots. Under this alternative, no study enclosures are proposed. This alternative would also not change the numbers or location of the trend plots. These would continue to be periodically monitored.

ALTERNATIVE 4 – GRADUAL GRAZING REDUCTION

This alternative would reauthorize livestock grazing in the Cinder Hill and Pine Mountain Allotments and would authorize the issuance of 10-year term grazing permits. It would authorize permittees to construct, maintain or improve improvements to control the movement and distribution of

livestock. Allotment management plans (AMP) would be updated for each allotment. Construction of new fence lines would allow for full utilization of the Cinder Hill Allotment and change allotment boundaries in both the Cinder Hill and Pine Mountain Allotments.

This alternative would divide the current Coyote Allotment into two parcels. The eastern parcel, including pastures 1, 2 and 3, with a total of 10,710 acres, would be combined with the Cinder Hill Allotment. The western portion, totaling 24,457 acres and including pastures 4, 5 and 6, would be closed as an allotment and all improvements removed as budgets allowed.

Actions specific to each allotment are described below.

Coyote Allotment

This allotment would be divided into two parcels with the eastern portion, including pastures 1, 2, and a portion of 3 totaling approximately 10,710 acres, being combined with the existing Cinder Hill Allotment. The remaining 24,457 acres would be terminated and the allotment closed (Figure 3a – Bessie Allotment, Alternative 2). Existing pastures 4, 5 and 6 would not be reconfigured into four new pastures. The allotment designation as a cattle and horse allotment would be eliminated.

Grazing of livestock would not be permitted. Use of livestock, particularly goats and sheep, to manage vegetation and/or extend the life of fuel reduction treatments would not be permitted. The area would not be used as a forage reserve to provide backup grazing in the event of wildfire or other disturbances that destroy or damage other federal allotment pastures.

This alternative would reduce the number of cattle from the current 450 to 0. This alternative would not permit the grazing of sheep or goats. There would be no grazing season.

The current Coyote Allotment has 21 historic water sets totaling approximately 21 acres. Fifteen (15) sites, totaling approximately 15 acres, would be eliminated from use and rehabilitated by either subsoiling and planting with native vegetation or allowed to restore themselves through natural processes. The other six (6) sites, totaling approximately six (6) acres are located in the eastern portion of the allotment and would be combined with the Cinder Hill Allotment. No temporary water sets or bedding sites would be needed for sheep or goats.

The six (6) road cattle guards within the western portion of this allotment would be removed. The cattleguard on Road 9710 proposed for removal and relocation on Road 1810 would not be relocated. No OHV cattleguards would be required if the proposed OHV trail system is implemented because of the Kelsey planning efforts.

This alternative would remove approximately 18 miles of existing fence line located within the western portion of the existing allotment. No new fence lines would be constructed within this area. New allotment fences to separate this area from the reconfigured Cinder Hill Allotment are discussed in the Cinder Hill Allotment discussion that follows. No temporary fences would be needed. Approximately one quarter (0.25) mile of existing fence line would be retained along the property boundary with adjacent ownerships to prevent the trespass of livestock onto National Forest land.

The two (2) horse/hike type horse gates proposed in Alternative 2 on Trail 61 would not be required and would not be constructed. System roads would not be crossed by new fence lines; no new wire gates would be required.

OHV use would be permitted and users would be required to follow OHV rules for the area. OHV use would be permitted to remove existing improvements.

The existing allotment contains one study enclosure and 10 trend plots. The study enclosure would remain under this alternative. The trend plots are utilized to

monitor the trends and conditions of range lands. This alternative would not change the number or location of the plots. They would continue to be periodically monitored.

Cinder Hill Allotment

Actions proposed for this allotment under this alternative are the same as those described in Alternative 2.

Pine Mountain Allotment

Actions proposed for this allotment under this alternative are the same as those described in Alternative 2.

MITIGATION MEASURES COMMON TO ALTERNATIVES 1, 2 AND 4

Botany

Use permit clauses to prevent the introduction or spread of noxious weeds by permittees and their vehicles.

Require that livestock entering National Forest lands be quarantined in a weed-free area to prevent weed seeds from being introduced or encourage the permittee to pasture them in a weed-free area prior to entry.

MONITORING – ALTERNATIVES 1, 2, AND 4

Heritage Resources

A qualified specialist would monitor mowing activities associated with new fence construction when such activities are located in areas characterized by uneven terrain and contain known cultural resource sites.

Wildlife

Sage Grouse

Utilization by livestock would be monitored in the Pine Pasture (Pine Mountain Allotment) when the pasture is grazed between May 15 and June 30. Monitoring plots would be located in representative habitats and in the immediate vicinity of known sage grouse nest areas. Livestock would be removed from the pasture when utilization reached 5.5 inches (14 cm) on Idaho fescue.

Deer

Monitoring of shrub utilization by livestock in the mule deer winter range land allocation would be initiated when:

1) it has been an exceptionally dry year as measured by abnormally low snowpack at higher elevations and the lack of spring rains; and
2) grazing occurring after July 15 during a drought year or after August 15 during a normal year.

Priorities are to monitor pastures in WRHUs that contain more than 1/3 of the shrubs in an early seral condition and

1) pastures that contain high percentages of xeric shrublands or dry ponderosa pine; and
2) pastures with high open road or OHV trail densities.

There are currently no strategies identified to quickly and effectively monitor browsing of upland shrubs by livestock. Proposed practices would include identification of high priority deer use areas, establishment of sample points or plots, and monitoring of browsing on current year's growth by livestock. Monitoring would including representatives of the USFS, ODFW and the allotment permittee.

ALTERNATIVE COMPARISON TABLE

Table 1 (page 2-20) displays a comparison of projected outputs for each alternative.

REASONABLY FORESEEABLE ACTIONS

PAST ACTIONS

FUZZY

The Fuzzy Environmental Assessment Decision Notice, signed July 13, 2000, authorized fuels reduction using mechanical shrub treatments (mowing), prescribe fire, or a combination on approximately 15,000 acres over a 10 year period.

The decision also authorized vegetation treatments (commercial and non-commercial timber harvest) on approximately 9,250 acres. This includes

Table 1 Alternative Comparison Table

	COYOTE				CINDER HILL				PINE MOUNTAIN			
	ALT 1	ALT 2	ALT 3	ALT4	ALT 1	ALT 2	ALT 3	ALT 4	ALT 1	ALT 2	ALT 3	ALT 4
Allotment Acres	35167	24457	0	0	37130	46755	0	46755	17023	16812	0	16812
Number of Pastures	6	4	0	0	5	7	0	7	4	4	0	4
Allotment Type	Cattle	Cattle/ Sheep	NA	NA	Cattle	Cattle	NA	Cattle	Cattle	Cattle	NA	Cattle
Grazing Season												
Dates (Cattle/Sheep) [1]	5/24-10/10	5/15-9/15 5/15–7/31	0	0	5/15-9/15	5/1-9/22	0	5/1-9/22	5/15-10/25	5/15-9/30	0	5/15-9/30
Number of Cow/Calf Pairs	450	200	0	0	266	600	0	600	500	500	0	500
Number of Sheep/Goats	0	700/500	0	0	0	0	0	0	0	0	0	0
Miles of Fence												
Miles of Existing	38	38	0	0	44	63	0	63	26	26	0	26
Miles of New [2]	0	9	0	0	0	15	0	15	0	8	0	8
Miles Removed	0	17	38	38	0	3	44	3	0	0.13	12	0.13
Miles Remaining [3]	11	0.25	`0.25	0.25	14	14	14	14	14	14	14	14
Acres of Vegetation Mowed[4]	0	1.1	0	0	0	1.5	0	1.5	0	1.0	0	1.0
Number of Road Cattleguards												
Number Existing [5]	11	11	11	11	17	17	0	17	7	7	0	7
Number of New		1	0	1	0	1	0	1	0	2	0	2
Number Removed	0	1	11	1	0	0	17	0	0	1	7	1
OHV Cattleguards												
Number Existing	0	0	0	0	27	27	0	27	2	2	0	2
Number of New	0	6	0	0	0	1	0	1	5	5	0	9
Number Removed	0	0	0	0	0	0	30	0	0	0	4	0

[1] If only a single pair of dates is shown, dates for grazing of sheep are the same as for the grazing of cattle. If there are two pair of dates shown, the first pair is for cattle; the second for sheep.

[2] New fence construction requires vegetation to be mowed to a minimum height of 6-8 inches with a strip width of 8 feet. Mowing would be accomplished using a wheeled farm tractor with an attached mower. The mowed strip would also provide access for other vehicles during construction. Fence reconstruction and maintenance does not require mowing.

[3] Fences forming a common boundary between National Forest Lands and other ownerships, including BLM, and which would not be removed under no grazing alternatives if grazing is present and continues on those adjacent ownerships. It is probable that those fences would be removed if grazing were halted on those other ownerships in the future.

[4] Approximate number of acres of vegetation mowed to construct new fence lines.

[5] Road cattleguards include a wire gate. These gates are included as part of the cattleguard improvement and are not included in the count of gates.

	COYOTE				CINDER HILL				PINE MOUNTAIN			
	ALT 1	ALT 2	ALT 3	ALT4	ALT 1	ALT 2	ALT 3	ALT 4	ALT 1	ALT 2	ALT 3	ALT 4
Number of Gates												
Number Existing (Metal/Wire)	2/36	2/18	0	0	0/56	0/56	0	0/56	1/10	1/10	0	1/10
Number of New (Metal/Wire)	0	0/10	0	0	0	6[6]/15	0	6[6]/15	0	0/5	0	0/5
Number Removed (Metal/Wire)	0	0	38	20	0	0	56	0	0	0	1/10	0
Water sets												
Number Existing	21	15[7]	21	15[7]	37	42[8]	0	42[8]	12	12	0	12
Number New	0	0	0	0	0	7	0	7	0	0	0	0
Number Removed	0	1	21	15	0	8	37	8	0	0	12	0
Acres Rehabbed[9]	0	0	21	15	0	8	37	8	0	0	12	0
Roads Reopened[10]												
Number Reopened	0	3	0	3	0	0	0	0	0	0	0	0
Miles Reopened	0	0	0	0	0	1.25	0	1.25	0	0	0	

[6] Four gates would be located in allotment boundary fence line between the new Bessie and Cinder Cone Allotments; one gate on the forest boundary; and one gate at Arnold Ice Cave.

[7] Number of historic water sets located within western portion of current Coyote Allotment. Other six (6) sets are located within the eastern portion of the allotment that would be combined with the existing Cinder Hill Allotment.

[8] Includes six (6) set locations located in east portion of existing Coyote Allotment.

[9] Average size of a water set is estimated at one (1) acre. If money is available, water sets would be subsoiled to a depth of up to 18 inches using a D7 or comparable crawler tractor with ripper teeth.

[10] Road is currently closed but accessible for administrative use or by permittee. To reopen, permittee would need to use a backhoe to blade the road. Road would remain closed beyond the water set.

approximately 4,391 acres of non-commercial tree thinning, approximately 4,550 acres of commercial tree thinning, and approximately 352 acres of overstory removal regeneration harvest.

SKELETON FIRE

The Skeleton Fire burned approximately 17,785 acres in 1996, including approximately 7,078 acres of National Forest lands in the Coyote Allotment. Approximately 160 acres were salvage logged. Approximately 200 acres were replanted. Approximately seven and one half (7.5) miles of system roads were closed (Evans West Environmental Assessment, Dec. 16, 1996). The area was also closed to grazing until 2006 or until the planted trees were large enough to withstand grazing by livestock.

EVANS WEST FIRE

The Evans West Fire burned concurrent with the Skeleton Fire in August 1996. Approximately 4,230 acres were burned. The entire fire acreage was located within the boundaries of Pasture 1 of the Cinder Hill Allotment.

The Evans West Environmental Assessment (EA) Decision Notice (December 16, 1996) authorized the salvage timber harvest of approximately 3,250 acres; the closing of approximately 22 miles of system roads; the replanting of approximately 3,500 acres; and the construction of a fence around approximately 1,800 acres to protect seedlings. The EA also authorized the salvage timber harvest of approximately 120 acres, planting of approximately 200 acres, and the closure of approximately seven and one half (7.5) miles of system roads within the boundaries of the Skeleton Fire. It also authorized the salvage timber harvest of approximately 160 acres in the Bessie Butte Fire, an arsonist caused, 257 acre fire in Pasture 4, Coyote Allotment started in July 1996.

Pasture 1 was closed to grazing until 2006 or until planted seedlings were tall enough to withstand grazing by livestock.

NEWBERRY NATIONAL VOLCANIC MONUMENT

The Newberry National Volcanic Monument (NNVM) was established by law (PL 101-522) on November 5, 1990. Creation of the Monument also eliminated grazing from within the Monument boundaries.

Prior to establishment of the monument, pasture 3 of the Cinder Hill Allotment had no fence along the southwest boundary. A lava flow prevented livestock from trespassing beyond the allotment boundaries. The northeast boundary of the Monument incorporated the lava flow within the Monument boundary. Pasture 3 was left without a boundary fence between it and the Monument. To prevent livestock trespassing into the Monument, grazing in pasture 3 was halted until a new fence could be authorized and constructed.

The combination of the Evans West Fire and the establishment of the Monument also resulted in a reduction in livestock numbers from the authorized 600 cow/calf pairs to 266 where it remains today.

PRESENT ACTIONS

18 FIRE

The 18 Fire, July 2003, burned approximately 3,810 acres including approximately 3,717 acres within the Cinder Hill Project Area. All burned acres within the project area are located within pasture 4 of the Coyote Allotment.

The district has proposed to removal hazard trees along system roads within the fire area. The proposed action would harvest trees damaged by the fire within 100-150 feet of roads that pose hazards to use of those roads.

FUTURE ACTIONS

KELSEY

The Kelsey Vegetation Management Environmental Assessment (EA) proposes to treat approximate 4,908 acres of to

reduce fuel loadings. This would be accomplished using mowing, prescribe fire, or a combination of methods. Approximately 733 additional acres would be treated by non-commercial thinning or pruning.

The Kelsey Vegetation Management EA also proposes vegetation treatments with associated fuels treatments on 5,094 acres including approximately 3,134 acres of commercial thinning and 1,960 acres of non-commercial thinning or pruning. An additional approximately 1,428 acres of vegetation treatments without additional fuels treatments would be also be applied. This would include approximately 928 acres of commercial thinning and 500 acres of non-commercial thinning or pruning.

The Kelsey Access Management EA would close all user-created roads and approximately 51 miles of system roads to motorized vehicle use. It would designate an OHV route system totaling approximately 55 miles, east of Forest Road 1810, north of Forest Road 9710, and south of Forest Road 18. It would require the placement of six (6) OHV cattleguards on proposed OHV trails that intersect with existing fence lines.

This EA also proposes to designate that planning area as closed to off-highway vehicle (OHV) use unless designated as open.

OPINE

The Opine Vegetation Management Environmental Assessment (EA) proposes to treat approximate 12,424 acres of predominately shrublands to reduce fuel loadings. This would be accomplished using mowing, prescribe fire, pretreatment by falling trees less than four (4) inches DBH, or a combination of methods.

Approximately 7,760 acres of ponderosa pine stands would be thinned. This includes approximately 4,042 acres of commercial thinning with approximately 3,489 of those acres including follow-up non-commercial thinning, and approximately 3,716 acres of non-commercial thinning only. Approximately 4,129 of the thinned acres would include associated fuels reduction activities; prescribe fire and/or mowing.

An additional 235 acres would have encroaching ponderosa pine and juniper removed to improve range habitats. An additional 6,769 acres of historic sage grouse habitat would be improved by removing encroaching trees, primarily less than 16 inches dbh.

This EA also proposes to designate that planning area as closed to off-highway vehicle (OHV) use unless designated as open. Within the Cinder Hill project area, this would include all of the Pine Mountain Allotment east of Forest Road 23.

The Opine Access Management EA would close all user-created roads and approximately 25 miles of system roads to motorized vehicle use. It would designate an OHV route system on Pine Mountain and in the Pine Mountain Allotment. It would also create a hiking trail around the Pine Mountain Observatory.

OFF-HIGHWAY VEHICLE

18 Fire

The district proposes to salvage timber on an unknown number of acres within the fire area. An unknown number of acres would be replanted with ponderosa pine. Past practice with recent fires suggests seedlings would be protected from grazing by livestock by either fencing the planted sites to prevent livestock from entering or by prohibiting grazing within the specific pasture.

BUREAU OF LAND MANAGEMENT (BLM)

The BLM is currently developing a resource management plan for their Upper Deschutes Resource Management Area. The plan includes all BLM managed lands adjacent to the Cinder Hill project area from Bend east to Pine Mountain. It does not include BLM lands east and south of Pine Mountain.

The plan would prescribes management activities and direction for all resource management activities in the plan area, including grazing. It proposes no changes in current grazing practices or programs.

CHAPTER 3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

AFFECTED ENVIRONMENT

RANGE

EXISTING CONDITIONS

Section 504 of the1995 Rescissions Bill requires that all allotments on each National Forest System unit shall establish and adhere to a schedule for the completion of National Environmental Policy Act (1969) analysis and decisions on all allotments within the National Forest System unit for which NEPA analysis is needed. The Coyote, Cinder Hill, and Pine Mountain Allotments are scheduled for analysis in compliance with the Rescissions Act.

Range management objectives for the Forest Service are to:
1) manage range vegetation to protect basic soil and water resources, provide for ecological diversity, improve or maintain environmental quality, and meet public needs for interrelated resource uses;
2) integrate management of range vegetation with other resource programs to achieve multiple use objectives contained in Forest land and resource management plans;
3) provide for livestock forage, wildlife food and habitat, outdoor recreation, and other resource values dependent on rangeland vegetation;
4) contribute to the and social well being of people providing opportunities for economic diversity and by providing stability for communities that depend on range resources for their livelihood; and
5) provide expertise on range ecology, botany, and management of grazing animals.

The Cinder Hill Project area includes three (3) grazing allotments; Coyote, Cinder Hill, and Pine Mountain. The project area totals approximately 89,320 acres including approximately 88 acres of private land and approximately 985 acres managed by the Bureau of Land Management (BLM). There are approximately 88,247 acres of National Forest managed lands within the project boundaries. The project area is located in T19S R12-14E, T20S R13-15E, and T21S R14-15E.

The approximately 88 acres of private land included in the project boundary is located in T20S R15W Section 17 along the north side of Pine Mountain. This parcel is owned by the current permittee on the Pine Mountain Allotment. Actions proposed and decisions made as a result of this analysis do not include this parcel.

The BLM manages 160 acres, also on Pine Mountain, in T20S R15W Section 30. This parcel is located within the boundaries of the Bend-Fort Rock Ranger District. The remaining BLM lands are portions of BLM lands located to the north and east of the project area and which are divided by allotment boundary fences. Grazing those lands is administered by the BLM. Grazing on BLM lands to the south and west of the fences is administered by the Forest Service as part of respective allotment permits. Actions proposed and decisions made as a result of this analysis would apply only to those BLM lands south and west of the allotment fences.

The Deschutes National Forest Land and Resource Management Plan (1990) (LRMP) identified 35 grazing allotments across the forest. All were cattle and/or sheep allotments. The three allotments in the project area are all designated cattle allotments and were part of the 34 allotments originally identified in the LRMP.

The LRMP (1990) states that the desired future condition (DFC) of these allotments is one where quality forage is available and the allotments are managed under grazing systems that protect plant vigor, minimize conflicts with other resources, and call for cost effective range improvements (LRMP page 4-6).

The LRMP established livestock grazing capacities of 600 cow/calf pairs for all allotments on the Forest. The Cinder Hill Allotment is designed to operate at the grazing capacity of 600 cow/calf pairs. It currently operates at 266 cow/calf pairs. This reflects the permittee's current capability, the lack of fences adjacent to the Newberry National Volcanic Monument (NNVM), and the loss of or damage to fences associated with wildfires including Evans West (1996), Skeleton (1996), and Sagebrush (1993) Fires. It also reflects reforestation activities in pasture 1 which have prohibited grazing until 2006. Three (3) of the five (5) pastures (pastures 2, 4, and 5) are currently grazed.

The Coyote and Pine Mountain Allotments are limited to 450 and 500 cow/calf pairs respectively. These lower numbers are due to limitations of available forage, other resource needs and objectives, and the length of the designated season of use.

All sheep allotments are currently vacant. There is a small local sheep industry and out-of-state sheep interests that could utilize existing sheep allotments. There has been an increase in interest to utilize sheep and goats to achieve specified vegetation management objectives including the control of noxious weeds and fuels reduction.

Demand for the grazing of cattle on Deschutes National Forest lands exceeds the availability of allotments. Four (4) private parties indicated interest in the vacant Coyote Allotment during scoping for this project. In addition to the Coyote Allotment, there are currently four (4) other vacant cattle allotments forest-wide. Restocking vacant allotments requires completion of a NEPA analysis.

Eight active cattle allotments totaling approximately 54,236 acres have been closed to grazing since 1990. All contained riparian areas and were closed to protect or enhance other resource values or because of economic constraints. There are no riparian areas located within the three allotments in the Cinder Hill project area. The Coyote Allotment was vacated by the permittee in 1991.

Both the Cinder Hill and Pine Mountain Allotments are currently active.

The project area includes four (4) LRMP land allocations: deer habitat (MA-7) with approximately 62,794 acres; general forest (MA-8) with approximately 15,207 acres; scenic views (MA-9) with approximately 8,881 acres; and old growth (MA-15) with approximately 1,365 acres. The project area contains no inventoried (RARE II) roadless areas. There are approximately 27,021 acres of inventoried roadless lands located within the boundaries of the NNVM, south of the Coyote Allotment.

Approximately 70 percent of the project area is located within the MA-7 (deer habitat) land allocation. The goal in this management allocation is to "manage vegetation to provide optimum habitat conditions on deer winter and transition ranges while providing some domestic livestock forage, …" (LRMP page 4-113). The LRMP (page 4-113) states: "Livestock grazing, both sheep and cattle, will be permitted with associated range improvements such as fences and water developments." The amount of livestock use was tiered to the need to provide for winter habitat for mule deer including available browse: Standard and Guide M7-8 (page 4-114) states "Forage utilization by livestock will be maintained at a level so that sufficient forage is available to support the desired number of deer. Grazing systems … will be designed to be compatible with or complementary to the habitat management objective."

Cattle are primarily grazers as opposed to browsers and prefer grass species when available. Cattle will utilize bitterbrush species. They generally do so when forage grasses dry out and go dormant. Protein levels in brush species tend to be higher at this time. This is minimized by grazing after grasses and forbs green up in the spring (generally May 1 to May 15) and before they go completely dormant in the fall (generally

September 15 to October 1). Within primary range areas, the combination of livestock and big game utilization on shrubs can be up to 50 percent of the annual shrub production. Competition for shrubs between deer and livestock is not an issue across the project area under current grazing management (Range Report, page 32).

Antelope bitterbrush, ***Purshia tridentata,*** is the preferred winter browse species of mule deer. It is common in all three allotments. Based on photo records associated with current trend study plots and coupled with fire and timber harvest history dating from approximately 1910, many of the current shrublands within the project area range in age from 40 to 80 years of age (Range Report, page 6). Bitterbrush productivity is optimized when shrubs are approximately 25-30 years of age. (Range Report, page 6).

In general, bitterbrush is considered an important shrub to wintering mule deer based on its palatability, ubiquity, relative quality, lack of essential oils (monoterpenoids), and the low availability of green forbs and grasses. Bitterbrush appears to be the most productive up to 25 – 30 years of age. As shrubs mature, they often exhibit dead material in their crown that reduces the quantity of browse for ungulates. Mule deer prefer to utilize new growth that the plant produces each year. Older stems are less nutritious and less palatable and therefore are often avoided.

Mule deer are primarily browsers but will utilize grasses and forbs. They are often seen in the late winter and spring utilizing grasses that are beginning to green up.

BLM managed federal lands and private ranches to the north and east of the project area provide important summer and winter range for a number of wildlife species including mule deer, elk, and antelope.

Approximately 17 percent of the project area is in the MA-8, General Forest, land allocation. The goal of the is to "emphasize timber production while providing forage production …" (LRMP page 4-117). This allocation is located along the south and southwest boundaries of the Coyote and Cinder Hill Allotments. It is considered to be transitional range.

Standard and Guideline M8-14 describes the criteria for grazing within transitory range. It identifies three situations under which grazing would take place.

1. "Where forage occurs as a result of site disturbance and/or timber canopy removal on a continuing basis."
2. "Where disturbed sites and/or areas under timber management can be seeded with species which improve forage production and do not restrict tree establishment and growth."
3. "On forest plantations when livestock will not damage the young trees. …" (LRMP page 4-118).

Approximately 10 percent, or approximately 8,881 acres, is located within the MA-9, Scenic Views, land allocation. The goal of this allocation is to "provide Forest visitors with high quality scenery that represents the natural character of Central Oregon" (LRMP 4-121).

This allocation is located primarily in the Coyote and Pine Mountain Allotments. In the Coyote Allotment, this allocation is located along trails and Road 9710. In the Pine Mountain Allotment, this allocation is located on the north side of Pine Mountain along Road 2017 and around the Pine Mountain Observatory.

Standard and Guideline M9-73 states that grazing is permitted when it is consistent with the Desired Visual Condition (LRMP 4-130). Standard and Guideline M9-74 allows structural range improvements, fences, water developments, and access roads, to be visible from sensitive view locations but would remain subordinate to the overall strength of the landscape being viewed or be designed to compliment scenic quality (LRMP 4-130). Standard and Guideline M9-75 requires that utilization standards be established which avoid an overused appearance (LRMP 4-130).

Approximately two (2) percent of the project area is in the MA-15, Old Growth, land allocation. The goal of this allocation is to "provide naturally evolved old growth forest ecosystems for (1) habitat for plant and animal species associated with old growth forest ecosystems, (2) representations of landscape ecology, (3) public enjoyment of large, old-tree environments, and (4) the needs of the public from an aesthetic spiritual sense.

There are three (3) old growth management areas (OGMAs) in the project area. OGMA 32, approximately 99 acres, is located in the western portion of the Coyote Allotment. OGMA 82, approximately 114 acres, is located near the southeast corner of the Cinder Hill Allotment. OGMA F11, the largest at approximately 1,176 acres, is located near the top of Pine Mountain in the Pine Mountain Allotment.

In contrast to the other land allocations in the project area, grazing is considered to be generally not compatible with old growth areas (S&G M15-7, LRMP page 4-150). The LRMP does not elaborate on the reasons for this statement. However, OGMAs are generally managed for bird species that utilize understory shrubs and grasses (Wildlife Report, page 46). Grazing within these areas has the potential to reduce the availability and distribution of those habitats and habitat components.

Approximately 26,810 acres of the project area are considered excellent potential range for livestock. Approximately 54,632 acres are considered moderate and 6,933 acres considered to have low range potential. Seven (7) acres are classified as very poor range potential (Range Report, page 7). These acres include National Forest system lands only.

Idaho fescue, ***Festuca idahoensis****,* is the primary forage species available to livestock on the three allotments. It is the key species for pasture management. The LRMP allows livestock to remove up to 50 percent of the annual growth of this species (LRMP page 4-50). All three allotments are currently grazed under a rest rotation grazing system which allows for one or more pastures within each allotment to be completely rested (not grazed) for one grazing season (one complete year). The remaining pastures are grazed on a rotating basis with each pasture grazed at a different period during the grazing season during subsequent years. This permits plants to periodically complete at least one complete annual cycle unencumbered by livestock.

Wildfires and management activities, including prescribed burning, mechanical mowing, timber harvest, grazing, reforestation, herbicide applications, and fire suppression, have influenced vegetation in the project area. Current trend study plots suggest that shrub recovery on wildfire and management treatment areas takes more than eight (8) years but is likely to be complete within 25 years in conjunction with grazing and fire suppression activities. Grasses and forbs respond well to disturbance and sustain increased production well into the mature vegetation conditions.

Disturbances also increase the percentage of bare soil. Reduction in the percentage of bare soil to pre-disturbance levels also takes more than eight (8) years.

Long term monitoring of current trend plots in shrubland areas suggests that, in the absence of fire and in conjunction with livestock grazing and under the influence of native ungulate grazing, the response of shrublands has been to establish a mature shrub community with a healthy understory of Idaho fescue. These plots suggest that this development occurs over a period of 30 years or more.

In forested areas with shrub understories and along the forest/shrubland interface, plots indicate an expansion of ponderosa pine and western juniper. Sagebrush and other shrubs are in decline and Idaho fescue has experienced a large increase in distribution and cover (Range Report, page 35).

Invasive plants have been found on current trend study plots. Cheat grass has been

found on some plots and records document its presence starting in the 1950s. Where wildfire has occurred near existing populations, it has increased. Data from older plots in the Coyote Allotment show a decline in cheat grass numbers and percentages indicating that native species have successfully competed against this aggressive invasive (Range Report, page 18). The largest cheat grass populations are currently located within the boundaries of the Skeleton Fire, primarily pasture 1 of the Coyote Allotment.

Invasives such as cheat grass, horehound, and quack grass, do well at sites that have compacted soils and are continually disturbed. Experience and the lack of populations outside of such sites suggests that livestock do not appear to be spreading these species. They also suggest that these species do not do well in uncompacted soils and where they must compete with healthy, native communities.

Noxious weeds have not been found on current trend study plots. Populations are not known to exist away from road corridors or other high disturbance sites.

Livestock do not appear to be spreading weeds in the project area. There appears to be no direct link to grazing livestock as a single weed source vector to weed establishment based on personal observation. Most if not all of the weed sites on the three allotments are associated with vehicle travel corridors or destination sites such as cinder pits.

Permittees use roads to access the allotments for various purposes including hauling water to livestock. No noxious weed populations were identified at water sets during an inspection in 2002. There are no documented weed sites at any active water set locations on the Forest.

There is a spotted knapweed site associated with a turnout on Forest Road 2017 017. This site has been used as a water set in the past. It is believed that the knapweed is associated with the stockpiling of tower parts for the Antelope Electronic site. The parts were delivered from the Tri-Cities area in Washington, an area with a large knapweed population. There is no evidence of livestock acting as vectors and expanding the existing population or establishing new populations elsewhere in the allotment.

Bend, Redmond, and Prineville all currently have serious noxious weed problems. The Bend-Fort Rock Ranger District is a common and popular destination for residents of those communities.

Current term grazing permits contain the following language to minimize the risk of spread of noxious weeds that permittees must follow:

- the permittee will prevent the spread of noxious weeds from private land or other lands from which he/she derives a benefit;
- a quarantine will be imposed on livestock exposed to noxious weeds for nine days prior to release onto Forest Service Allotments;
- vehicles which have come in contact with noxious weeds will have their under carriage washed prior to use of public lands; and
- the permittee is encouraged to use certified weed free feeds and/or selective grazing of non-infested pastures prior to turn-out.

Current grazing practices along with existing management strategies for the control of noxious weeds do not appear to support the concept of widespread noxious weed invasions into native communities. Weed introductions will likely continue via multiple vectors including livestock operations (Range Report page 41).

Livestock grazing has the potential to reduce species diversity and ecosystem health over time as a result of livestock preferences for certain species and seral stages, trampling of vegetation, and impacts to soil in the form of compaction, decreased water infiltration and increased erosion (Belsky & Blumenthal 1997 as cited in the Range Report, page 19). While controlled utilization of forage, pasture rotation, and

timing of the grazing season diminishes the ecological impacts of grazing, some research shows that grazing systems have adversely impacted species diversity and ecosystem health in similar arid and semi-arid areas in the Great Basin Region (Belsky & Blumenthal 1997 as cited in the Range Report page 19). Livestock impacts also vary with animal density and distribution: the more evenly grazers are distributed, the lower their impact on any given area (Gillen et. al.1984 from Belsky & Blumenthal 1997 as cited in the Range Report page 19).

There are small areas, primarily water sets, that have been heavily used by livestock over a long period of time, are detrimentally compacted, and have plant communities that contain cheat grass and fewer species of plants than adjacent areas. They comprise approximately 0.08 percent of the project area or a total of approximately 65-70 acres (approximately one acre per water set). Impacts are limited by controlling the numbers and distribution. The same sites are generally used each year. Some sites may be occasionally rested which does permit some natural recovery.

Species conversion due to existing vegetation conditions and changes in historic influences are an issue within the project area. Ponderosa pine, and on a smaller scale, Western juniper, are encroaching into many of the shrubland community sites along the northern boundary of the area and on the slopes of Pine Mountain. Western juniper is present, population levels are not currently a concern over most of the project area.

Stand density is an issue and is generally attributed to the fire exclusion by most of the recent publications on forest health (Belsky & Blumenthal 1997 as cited in the Range Report page 21). Livestock can contribute to stand density by removing some of the herbaceous understory during the grazing season. Removal of these fine fuels can reduce the ability of a low intensity ground fire to kill regenerating trees. Belsky & Blumenthal (1997 as cited in the Range Report page 21) present examples of areas where livestock grazing in the arid west has been the main variable in stands of Ponderosa pine that exhibit density problems. Locally, areas east and west of highway 97 have had little or no grazing for over 50 years and exhibit similar tree density issues found on the active upland allotments on the east side of the District.

Scientific evidence exists which suggests that grazing causes increased tree densities because livestock consume and lower the density of grasses that would otherwise compete with tree seedlings for space, water, and nutrients (Belsky & Blumenthal 1997 as cited in the Range Report, page 21). Based on observations of study enclosures on the Bend-Fort Rock Ranger District, tree density appears to be more of a factor of past stand management activities and/or specific microsite differences as opposed to livestock grazing (Range Report, page 21).

Two Region 6 sensitive plant species are present in the project area: pumice grape fern and green tinged paint brush. The pumice grape fern is only located in the South Pasture of the Pine Mountain Allotment. It is unknown if livestock graze this species. A recent study suggests that the removal of above-ground biomass does not have a negative impact on emergence and seems to have stimulated emergence (Range Report, page 24). Trampling and soil disturbance may have a greater effect on the species. Grazing may have a beneficial effect on the plant by removing competing vegetation (Wildlife report, page 24).

The green tinged paint brush is located in both the Pine Mountain and Cinder Hill Allotments. This species is not grazed by livestock. It does not respond well to fire. Local populations may also be affected by trampling, bedding, and soil disturbance.

Range study plots were initially established in the Coyote Allotment in the 1950s to monitor the condition of range vegetation and to establish a method of determining vegetation trends. Plots were established in

the early 1960s for much of the Cinder Hill and Pine Mountain Allotments.

The project area contains no lakes, ponds, perennial or intermittent streams or springs. Water for livestock is hauled to water sets by the permittee. This requires water sets be located adjacent to or easily accessible from forest roads. There are 65 water sets within the project boundaries. Current locations are a reflection of the needs from present and past livestock stocking levels.

The number and distribution of existing sites has also been influenced by other land management activities and resource concerns in addition to range program objectives. The establishment of the East Fort Rock OHV Trail System closed access to some sites and utilized others for staging and camping areas. This resulted in reduce numbers and changed distribution patterns of others. Other projects closed roads and eliminated access resulting in further reductions in numbers. Road closures associated with wildfires such as the Skeleton Fire eliminated access to still more sites. Natural revegetation has closed other sites, particularly within the Coyote Allotment and pasture three of the Cinder Hill Allotment where no grazing has occurred over the past decade.

Because water sets are located adjacent to forest roads, they are popular for dispersed camping and staging areas for OHV riders. Recreational use of water sets during periods of grazing results in conflicts between livestock and recreational users. Some water sets have been closed and moved to reduce or eliminate conflicts with other users.

COYOTE ALLOTMENT

This allotment was vacated by the permittee in 1991 citing increasing public use and associated conflicts with livestock. Cattle were being killed by both packs of dogs and speeding vehicles on Forest Road 18. Public use has continued to increase since the allotment was vacated.

Wildfire events, particularly the Skeleton (7,078 acres), Wind (1992 – 1,629 acres), and Horse Butte (1995 – 212 acres) Fires, removed most or all of the forest canopy and most of the shrub component. Native grasses and forbs have thrived and forage production has been greatly enhanced relative to pre-fire conditions. Grazing has not occurred since the fires. Vegetation has recovered undisturbed by domestic livestock.

This allotment was established in 1936 as a community allotment to provide range for horses and cattle for adjacent landowners. Prior to 1936, the area was grazed by trespassing horses and trailing sheep using the Bessie Butte sheep driveway. The allotment was last grazed in 1990 and vacated in 1991.

The allotment has six (6) pastures, approximately 38 miles of barbed wire fences, 11 road cattleguards, one (1) range study enclosure, 10 current trend study plots, and 21 water sets. Water haul provides the only water source for livestock. It was grazed using a rest rotation grazing system. Full stocking for the allotment is 450 cow/calf pairs. It is designated as a cattle and horse allotment.

The last environmental analysis and allotment management plan (AMP) were completed in 1981.

The current condition of forage species (grasses and forbs) is fair to good. Forage species are healthy but competition between species is strong.

Vegetation trends are stable for the shrub component, increasing for the grass and forb component, and stable for bare soil. In areas with a tree canopy, tree canopies have increased in size and cover percentage. Juniper has expanded into areas where it was not previously present.

Much of the allotment is classified as transitional range due to the overstory of pines and bitterbrush. Understory grasses and forbs are subject to increasing competition for light, nutrients, and water. Forage quality is continuing to decline with the lack of utilization. Forage quality has

increased where vegetation management activities, timber harvest and thinning, mowing, and prescribed burning, have occurred. Similar responses have been observed in wildfire areas.

CINDER HILL ALLOTMENT

This allotment is currently active. Three (3) pastures are currently being grazed by 266 cow/calf pairs. Two pastures are currently not permitted to be grazed. Full stocking for the allotment is 600 cow/calf pairs. It is designated as a cattle and horse allotment.

This allotment has five (5) pastures, approximately 44 miles of barbed wire fences, 17 road cattleguards, 30 off-highway vehicle (OHV) cattleguards, 2 range study enclosures, and 10 current trend study plots. There are 37 water sets. Water haul provides the only water for livestock. The allotment is grazed on a rest rotation system.

Pasture 3 is currently closed to grazing. There is no fence along the southwest boundary of the pasture to prevent livestock trespass into the NNVM. The 1988 Paulina Fire removed the natural tree barrier that prevent livestock from leaving the pasture.

Pasture 1 was closed to livestock after the 1996 Evans West Fire to protect trees that were planted after the fire. Grazing may be re-instituted in 2006 if the trees are determined to be unaffected by grazing pressures and fences damaged by the fire are rebuilt.

The last environmental analysis and AMP were completed in 1991.

Forage conditions in the allotment are considered to be in fair to good condition. The majority is in good condition as it is providing good forage production while maintaining quality native habitat and meeting other resource objectives such as winter mule deer habitat (Wildlife Report, page 13).

Vegetation trends are stable for the shrub component, increasing for the grass and forb component, and stable for bare soil. In areas with a tree canopy, tree canopies have increased in size and cover percentage.

Much of the allotment is classified as transitional range due to the overstory of pines and bitterbrush. Understory grasses and forbs are subject to increasing competition for light, nutrients, and water. Forage quality is continuing to decline with the lack of utilization in pastures one and three. Forage quality has increased where vegetation management activities, timber harvest and thinning, mowing, and prescribed burning, have occurred. Similar responses have been observed in wildfire areas such as the Skeleton and Evans West Fires.

PINE MOUNTAIN ALLOTMENT

This allotment is currently active. It has four (4) pastures and is grazed on a rest rotation system. It contains 26 miles of barbed wire fences, seven (7) road cattleguards, five (5) OHV cattleguards, three (3) trick tanks, and seven (7) current trend study plots. There are 12 water sets. Water haul is the only water source for livestock. Full stocking for the allotment is 500 cow/calf pairs. It is designated as a cattle and horse allotment.

Trick tanks collect rainwater for use by livestock and wildlife. One, located on the south slopes of Pine Mountain, is in a state of disrepair and is unusable. One is located on the ridgeline approximately one half mile west of the Antelope Electronic site on the east side of Pine Mountain. The third is located on the ridgeline approximately one mile west of the Pine Mountain Observatory.

The southern boundary of the allotment, and the southern boundaries of the South and Coop pastures, lack fence lines to prevent livestock from leaving the allotment. There is also no pasture fence line to separate the South and Coop pastures.

An environmental assessment and AMP were last completed in 1983.

Forage conditions in the allotment are considered to be in fair to good condition. The majority is in good condition as it is

providing good forage production while maintaining quality native habitat and meeting other resource objectives such as winter mule deer habitat (Wildlife Report, page 15).

Vegetation trends are stable or increasing for the shrub component and increasing in the grass component. The trend for bare soil is widely variable with two current trend study plots showing an increase in bare soil, two showing a decreasing in bare soil, and two showing stable levels of bare soil. This variation may be due to vegetation trending toward more mature communities and the type of vegetation occupying the site resulting in an increase or decrease in the amount of bare soil.

Much of the allotment is classified as transitional range due to the overstory of pines and bitterbrush. Understory grasses and forbs are subject to increasing competition for light, nutrients, and water. Wildfire played a major role in vegetation development on Pine Mountain during the early 1900s. Vegetation patterns created by those fires remain visible today.

ENVIRONMENTAL EFFECTS

ALTERNATIVE 1 – CURRENT MANAGEMENT

DIRECT AND INDIRECT EFFECTS

Issue 1: Vegetative conditions within the Cinder Hill Project area are outside the range of natural variability. This has resulted in higher fuel loadings and larger, more intense wildfires.

Approximately 54,153 acres, the Cinder Hill and Pine Mountain Allotments, would continue to be grazed under this alternative. The Coyote allotment, approximately 35,167 acres, would remain vacant. No acres would be available for grazing of sheep and/or goats along the wildland/urban interface (WUI).

Livestock would be available to manage vegetation on active grazing areas only. Livestock would not be used to extend the effectiveness of fuels treatments within the Coyote Allotment. Livestock would be used to manage current year fuel loadings in active pastures of the Cinder Hill and Pine Mountain Allotments.

Vegetative community diversity would remain unchanged. Changes resulting from grazing would have no measurable effects without other actions or events such as wildfire.

The risk of wildfire will be unchanged in the actively grazed areas in the Cinder Hill and Pine Mountain Allotments. It would continue to increase over time in the Coyote Allotment where grazing would not be reintroduced. The risk would also continue to increase in pasture one of the Cinder Hill Allotment until at least 2006 when livestock could be reintroduced.

ISSUE 2: Grazing should be reduced or eliminated on public lands.

Grazing would continue on the Pine Mountain and the Cinder Hill Allotments, approximately 54,153 acres. The Coyote Allotment would remain vacant but would be available with additional environmental analysis. No acres would be closed to grazing.

ISSUE 3: Grazing of livestock, particularly cattle, creates conflicts with wildlife, particularly mule deer and sage grouse

The use of winter deer range by livestock would remain at current levels. Competition between livestock and mule deer for bitterbrush would remain the same.

ISSUE 4: Increasing recreational activity is resulting in an increasing range of vehicle types and sizes. Such use is resulting in increasing risks of accidents and conflicts between grazing operations and other forest users.

The Coyote Allotment was vacated in 1991 because of increasing conflicts between grazing operations and other forest users, particularly along Road 18. The Coyote Allotment would remain vacant under this alternative.

Conflicts at OHV staging areas, dispersed sites, and other sites would continue. Water sets would not be moved. Fences would not be constructed to restrict or keep livestock out.

OTHER EFFECTS

The rate of improvement in range conditions would not change.

Better livestock distribution would not be attained because no new water sets would be developed.

Existing fences would continue to affect wildlife movement. All three allotments contain fences or fence segments that are not wildlife friendly and do not meet fence standards as described in FSM 2209.22. They are either too high to permit deer and elk to easily jump; too low to permit antelope to easily go under; or a combination of the two. These conditions would continue until the fence or fence segment was reconstructed or required maintenance which could be 10 years or more.

There would be no change in livestock stocking levels. The reduced number of pastures would continue to limit options for the timing of livestock grazing.

There would be no change in soil effects associated with water sets. The total number of water sets would remain at 70. The number of acres of detrimental soil impacts and with little or no vegetation would also remain the same, approximately 70. The 21 water sets in the Coyote Allotment would remain unused and would continue to recover naturally. There would be no measurable increase in productivity; the number of acres that would continue to recover would remain less than one tenth of one (0.1) percent.

Soil displacement associated with digging and dusting by livestock for insect protection and bull displays would continue in the Cinder Hill and Pine Mountain Allotments. These activities would not be expected to result in measurable expansion of the water set area. This would not occur in the Coyote Allotment which would remain vacant.

Water sets in the Cinder Hill and Pine Mountain Allotments would continue to provide supplement water for wildlife when the they are active. Water troughs that lack escape ramps would trap wildlife. Water sets would also provide a source of salt for wildlife. This would also likely result in additional digging by big game during and after the grazing season as deer and elk seek salt spilled by the grazing operation.

Loaded water trucks hauling water on unmaintained roads can impact road surfaces. During dry periods, smaller soil particles rise to the surface and may be lost through wind erosion or by displacement from the wheel track. The road may be come rutted. Heavy dust may develop and may increase the risk of an accident between two vehicles or vehicles and livestock. These conditions may result in additional or more frequent road maintenance thereby increasing costs.

Use of roads by livestock would increase the risk of increasing soil erosion from roads. The risk of accidents between livestock and motorized vehicles would continue. Livestock would continue to use roads because of ease of travel and to access water sets. Permittees would continue to use roads to trail livestock from pasture to pasture and to and from the allotment.

No new allotments or portions of allotments would be available to meet public demand.

Forage production and associated economic returns would not change.

There would be no change in the number, distribution, or viability of sensitive plant species.

Potential vectors for noxious/exotic plants would remain unchanged.

Monitoring would occur on all pastures in all active allotments using the Grazing Implementation Monitoring Module. Short

and long term vegetative conditions would be identified that would influence both short (annual) and long-term allotment and pasture management including stocking levels and seasons of use.

Effects specific to each allotment are discussed below.

Coyote Allotment

Fences and other existing improvements would continue to deteriorate. They would pose a continuing and increasingly serious safety issue for the general public, other domestic animals, and wildlife.

Fuel loadings would continue to increase as livestock would not be utilized to control fine fuels generated by annual plant growth.

Twenty-one (21) existing water sets would continue to naturally revegetate. Approximately 21 acres of compacted soils would continue to gradually recover through freezing and thawing action. Complete recovery would require 50 or more years. This would result in a negligible improvement in productivity; 21 acres is less than one tenth of one percent (0.1 percent) of the allotment acreage.

The risk of increased erosion from roads associated with livestock use of roads would be eliminated. The risk of accidents between livestock and motor vehicles would also be eliminated. The allotment would remain vacant.

There would be no human/livestock interactions and conflicts at the Arnold Ice Cave site. The current pasture fence would not be moved. The allotment would remain vacant (Issue 4).

Cinder Hill Allotment

Grazing would continue to reduce fine fuel loadings over both the short and long term (Issue 1).

Conflicts would continue between livestock and OHV users and other recreational visitors at the Road 25 staging area and adjacent water set (Issue 4).

Pasture three would continue be ungrazed. No fence would be constructed to prohibit livestock from trespassing into the NNVM. The permittee would be unable to stock the allotment to its full potential, even if pasture one is reopened to grazing in 2006.

There would be no effect on the permittee's current operation. This alternative would not change the permittee's use on adjacent BLM or his lands.

Pine Mountain

Grazing would continue to reduce fine fuel loadings over both the short and long term.

There would be no effect on the current permittee's current operation. This alternative would not change the permittee's use on adjacent BLM or his lands.

CUMULATIVE EFFECTS

The Prineville District, BLM, is currently completing work on the **Upper Deschutes Resource Management Plan/Environmental Impact Statement** (EIS) that includes BLM managed federal lands to the north of the project area. There are no proposed actions to change current grazing practices or the operations of permittees who current hold permits on both BLM and Forest Service allotments.

There are no other reasonable or foreseeable actions on either BLM or other private lands that would cumulatively affect resource values within the project area.

Coyote Allotment

Both the Kelsey Vegetation Management EA and the Fuzzy EA proposed vegetation and fuels treatments within the boundaries of the Coyote Allotment. Neither of these projects and their actions would have any cumulative effect on grazing in the Coyote Allotment under this alternative. The allotment would remain vacant.

Cinder Hill

Fuels and vegetation treatments implemented as a result of the Fuzzy EA (2000) have had no measurable effect on grazing in this allotment.

Fuels treatments proposed under the Opine Vegetation Management EA would affect grazing in this allotment if the treatment area is large or involves two or more pastures and other resources require pastures to be rested for more than a single season after treatment. This would require resting more than two pastures during a given grazing season and would not be achievable unless the permit is suspended. This would be a major economic impact to the permittee.

Vegetation treatments proposed under the Opine Vegetation Management EA would also affect grazing but over the longer term. Treatments would increase the quantity and quality of forage in thinned forest stands within several years by reducing competition for nutrients, space, and water. Reduced canopy closure levels would increase light regeneration of shrub, grass, and forb species. By providing additional forage for livestock, this would be expected to reduce the risk of livestock browsing bitterbrush and reducing winter browse for mule deer. These increases would be expected to be retained for several decades or until the overstory canopy reclosed, depending on residual tree spacing and size.

There would be little or no impact to existing browse and forage species. Proposed treatment areas generally have depauperate understories or understories of scattered, individual plants characterized by low vigor and health. Felling and skidding operations in commercial timber sale units would be expected to damage or kill scattered individuals. The numbers and area affected would be limited due to the existing low populations and the use of designated skid trails and the use of mechanized harvest equipment. These impacts would also be expected to be relatively short term, less than five (5) years.

Pine Mountain Allotment

Fuels treatments proposed under the Opine Vegetation Management EA would affect grazing in this allotment if the treatment area is large or involves more than one pasture and other resources require pastures to be rested for more than one season after treatment. This would require resting more than a single pasture during a given grazing season and would not be achievable unless the permit is suspended. This would be a major economic impact to the permittee.

Vegetation treatments proposed under the Opine Vegetation Management EA would also affect grazing but over the longer term. Treatments would increase the quantity and quality of forage in thinned forest stands within several years by reducing competition for nutrients, space, and water. Reduced canopy closure levels would increase light levels to the forest floor and allowing for regeneration of shrub, grass, and forb species. By providing additional forage for livestock, this would be expected to reduce the risk of livestock browsing bitterbrush and reducing winter browse for mule deer. These increases would be expected to be retained for several decades or until the overstory canopy closed.

There would be little or no impact to existing browse and forage species. Proposed treatment areas generally have depauperate understories or understories of scattered, individual plants characterized by low vigor and health. Felling and skidding operations in commercial timber sale units would be expected to damage or kill scattered individuals. The numbers and area affected would be limited due to the existing low populations and the use of designated skid trails and the use of mechanized harvest equipment.

Removal of western juniper from three areas, totaling approximately would move the existing vegetation structure towards the pre-Euro-American settlement condition of a more open savannah with scattered and sparse juniper. It would increase in both the quantity and quality of forage and browse species.

There would be no measurable effect on grazing or grazing operations from the removal of encroaching juniper and ponderosa pine on approximately 6769 acres of historic sage grouse habitat.

These areas are currently shrub-steppe communities with scattered and usually small juniper and ponderosa pine. Removals would retard or set back the conversion of existing shrub-steppe communities to juniper or ponderosa pine woodlands. There would be no change in shrub or grass/forb community structure or change in browse or forage production or availability. Trees would be cut and using chainsaws and left on site. The resultant slash would be either lopped and scattered or piled. No other vegetation would be cut or removed.

ALTERNATIVE 2 – PROPOSED ACTION

DIRECT AND INDIRECT EFFECTS

This alternative would allow for annual or periodic vegetation management through livestock grazing and would implement the direction of the 1990 LRMP concerning a well managed fire protection program that is cost efficient, responsive to land stewardship needs, and resource management goals and objectives (1990 LRMP 4-9).

This alternative would modify grazing permits and allotment management plans for each allotment to include updated grazing practices.

ISSUE 1: Vegetative conditions within the Cinder Hill Project area are outside the range of natural variability. This has resulted in higher fuel loadings and larger, more intense wildfires.

Grazing would be authorized on approximately 63,567 acres in the Pine Mountain and new Cinder Cone Allotments. Approximately 24,457 acres in the new Bessie Allotment would be placed in a forage reserve and available for grazing on an intermittent basis to achieve other resource objectives or as temporary replacement pasture.

ISSUE 2: Grazing should be reduced or eliminated on public lands.

No acres would be closed to grazing. Approximately 24,457 acres in the new Bessie Allotment would be placed in a forage reserve and available for grazing on an intermittent basis.

ISSUE 3: Grazing of livestock, particularly cattle, creates conflicts with wildlife, particularly mule deer and sage grouse.

Browsing of bitterbrush by livestock would be minimized by using a three (3) inch stubble height utilization standard on Idaho fescue. Livestock would be moved to other pastures when this standard was met.

There would be no effect of new or reconstructed fences on wildlife. Fence heights would range from 38-42 inches. Where antelope are present, the lowest strand would be 18 inches or more above the ground and be of smooth wire. In areas of known sage grouse habitat or travel routes, white topped posts would be used to aid birds in seeing the posts. All fences would be constructed or reconstructed to standards in FSM 2209.22. Fence standards are designed to facilitate the movement of big game and other wildlife.

Existing fences that exceed current fence standards are present in all three allotments and would be replaced over time (probably more than 10 years depending on budgets, personnel, etc.) to meet current fence standards.

ISSUE 4: Increasing recreational activity is resulting in an increasing range of vehicle types and sizes. Such use is resulting in increasing risks of accidents and conflicts between grazing operations and other forest users.

The western portion of the Coyote Allotment (new Bessie Allotment) would become a forage reserve. Grazing of cattle would be limited to two (2) pastures, East and West, south of Road 18. Use would be intermittent.

Sheep and goats would be herded and therefore less likely to become involved in accidents with vehicles. Use would be targeted to specific areas and to meet specific objectives.

Construction of new fences at Boyd Cave and the Road 25 Staging Area would further reduce the possibility of accidents.

OTHER EFFECTS – ALL ALLOTMENTS

Use of smooth wire for the top and bottom strands of wildlife friendly fences would reduce the lifespan of the fence, increase maintenance costs , and affect the performance of the fence. Smooth wire fences are not as effective in containing cattle. They have different expansion and contraction rates than barbed wire. The permittee would need to carry tools to maintain both types of fence.

There would be no measurable change in soil effects associated with water sets. The total number of water sets would decline from 70 to 68. The number of acres would also decline to approximately 68 or approximately three (3) percent. The number of acres associated with water sets that have compacted soils and are denuded of vegetation would remain less than one tenth of one percent (0.1 percent) of each allotment and the project area.

Soil displacement associated with digging by livestock for insect protection and bull displays would continue. These activities would not be expected to result in measurable expansion of the water set area.

Water sets would continue to provide supplement water for wildlife when the water set was active. Water troughs that lack escape ramps would trap wildlife. Water sets would also provide a source of salt for wildlife. This would also likely result in additional digging by big game during and after the grazing season as deer and elk seek salt spilled by the grazing operation.

Loaded water trucks hauling water on unmaintained roads can impact road surfaces. During dry periods, smaller soil particles rise to the surface and may be lost through wind erosion or by displacement from the wheel track. The road may be come rutted. Heavy dust may develop and may increase the risk of an accident between two vehicles or vehicles and livestock. These conditions may result in additional or more frequent road maintenance thereby increasing costs.

The following sections describe effects specific to each allotment.

Bessie Allotment (west portion Coyote Allotment)

Construction of six (6) miles of new fences would allow pastures one, two, and three to be combined with the Cinder Hill Allotment. It would also permit creation of the new Bessie Allotment from the remainder of the current Coyote Allotment. Allotment size would be reduced from approximately 35,167 acres to approximately 24,457 acres with approximately 10, 710 acres being added to the Cinder Hill Allotment.

New allotment boundary fence construction would prohibit vehicle access on roads 1819-200 and 1819-230. The fence would be built in the middle of the 230 road. No gate would be constructed where the fence crossed the 200 road. These roads were closed as part of the Fuzzy Environment Assessment (2000) and would result in the final and complete closure of approximately 1.25 miles of road.

Construction of nine (9) additional miles of new fences would configure the new Bessie Allotment into four (4) pastures, including two (2) for grazing of cattle, horses, sheep, and goats, and two (2) for the grazing of sheep and goats only. This would create a forage reserve of two pastures for cattle and horses. It would permit the grazing of 200 cow/calf pairs and/or 700 sheep or 500 goats.

Construction of approximately nine (9) miles of new fence would require the mowing of approximately one and one tenth (1.1) acres of vegetation. This would have no measurable effect on any resource. Mowed vegetation would be at least six to eight (6-8) inches in height with a strip width of approximately eight (8) feet. The area mowed would be less than one hundredth ($1/100^{th}$) of one (1) percent of the allotment area (24,457 acres). There would be no

effect from fence reconstruction, it does not require mowing.

Installation of one (1) new road cattleguard on Road 1810 as a result of new fence construction would have no measurable effect. There would be an increase in maintenance costs due to the addition of this cattleguard. Costs would be incurred by the Forest Service as the road is a Maintenance Level III road.

Removing the existing fence and relocating it adjacent to the Arnold Ice Cave would reduce conflicts and interactions between livestock and recreational users of the cave. It would also reduce vandalism to the fence and other improvements and result in reduced maintenance costs.

Removing approximately 10.5 miles of fence along the forest boundary would reduce maintenance costs and vandalism. It would reduce the ability of forest users and adjacent property owners to identify the property boundary. This would increase the potential for trespass and unauthorized ingress and egress.

Removal of approximately five and one half miles of existing interior fences that are not needed for grazing operations would improve safety for forest users and reduce the risk to wildlife.

There would be no measurable effect of using existing water sets in the new Bessie Allotment and reconfigured pastures. Designated water sets would only be required in the new East and West pastures for cattle and horses; sheep and goats would be herded to previously disturbed sites including landings, existing water sets, cinder pits, and utility (powerline, gas transmission line, etc.) corridors for water and bedding.

Harassment and the killing of livestock associated with increased recreational use, increased traffic on Road 18, and increased urbanization along the forest boundary would be decreased. Pastures available to graze cattle would be located south of Road 18 and away from the forest boundary.

Only sheep and goats would be permitted to graze in the new North and South pastures. Conflicts would be minimized because sheep and goats are herded whereas cattle are allowed to roam freely within the pasture.

The risk of increased erosion from roads associated with livestock use would increase from Alternative A. It would be limited in intensity and duration because of the reduced stocking levels and the more limited grazing season. Grazing of cattle would be limited to two (2) pastures and would occur on an irregular basis but generally not in consecutive grazing seasons.

The risk of accidents involving livestock and motor vehicles would increase, potentially to levels above those present when the allotment was vacated in 1991. Recreational traffic on forest roads, and particularly Road 18, has increased and is expected to continue to do so. Limiting cattle grazing to two pastures south of Road 18 would reduce the risk. Grazing of sheep and goats in areas adjacent to Road 18 would result in an increased risk but the presence of herders and/or herd animals (dogs, etc.) would help to keep animals off the road and limit the risk and potential for an accident.

Livestock, particularly sheep and goats, would be utilized to reduce the risk and intensity of wildfire along the urban interface. They would provide periodic vegetation maintenance and extend the period of effectiveness for other treatments such as mechanical mowing and prescribed burning.

The risk of livestock browsing bitterbrush would be greater than Alternative 1 because livestock would be reintroduced into the allotment. The increase is not expected to be large due to the limited amount of grazing; limiting cattle to two pastures; and the targeted grazing of sheep and goats on specific vegetation or to meet specific fuels objectives. Depending upon the fuels objectives, it is expected that livestock would be moved when the average

utilization is not less than five (5) inches of stubble height on Idaho fescue (Issue 3).

Cinder Cone Allotment (Cinder Hill and eastern portion of the Coyote Allotment)

Allotment size would increase from approximately 37,130 acres to approximately 47,840 acres with the addition of approximately 10,710 acres from the Coyote Allotment.

The increased size of the allotment would improve the distribution of livestock. Construction of new fences and reconstruction/repair of existing fences would permit grazing on five (5) or six (6) pastures during a grazing season versus the maximum of four (4) under current management. This would not occur until at least 2006 when pasture one of the existing Cinder Hill and pasture one of the existing Coyote Allotment are reopened to grazing.

Grazing of fire impacted pastures, pasture one in the current Coyote and Cinder Hill Allotments would stimulate growth and quality of existing vegetation, especially forage species (grasses and forbs). This would reduce the risk of livestock browsing bitterbrush and increase the potential for providing sufficient browse for mule deer during winter months.

Based on past experience and trend analysis plot monitoring, grazing of these fire impacted pastures would also be expected to result in an increase in shrub quantity, quality, and distribution. Livestock would reduce plant competition and allow new shrubs to become established. In the long term, 25 years or longer, this would be expected to result in an increase in browse for mule deer.

The permittee would be allowed to fully stock the allotment upon construction of the new pasture/allotment fences and reconstruction of fences damaged or destroyed by wildfire. The construction of approximately six (6) miles of new pasture/allotment fence along the southwest boundary of pasture 3 (new name - Orphan) would prevent livestock trespass into the NNVM.

Construction of the pasture/allotment boundary fence would result in a reduction of approximately 1085 acres in the allotment, from approximately 47,840 acres to approximately 46,755 acres. The new Orphan pasture would also be reduced by 1085 acres. This would result in an increase in the number of acres per cow/calf pair from the current approximately 62 acres per pair to approximately 78 acres per pair. This would also be expected to result in a reduced competition between livestock and big game, particularly mule deer, for browse and forage. It would also be expected to reduce the risk of livestock browsing bitterbrush, preferred mule deer winter browse.

Construction of approximately three quarters of a mile of new fence adjacent to the 2500 800 road water set would reduce or eliminate livestock use at this site. It would allow for continued rehabilitation and revegetation of the area. Conflicts between livestock and users of the Road 25 staging area would be reduced. The number of cattle trails between the staging area and the water set would be reduced thereby reducing the potential for OHV riders confusing designated trails with livestock trails. This would result in reduced fragmentation of wildlife habitat, detrimental soils impacts such as compaction and displacement, and reduce the number unauthorized OHV trails.

Construction of approximately 15 miles of new fence would require the mowing of approximately two (2) acres of vegetation. This would have no measurable effect on any resource. Mowed vegetation would be at least six to eight (6-8) inches in height with a strip width of approximately eight (8) feet. The area mowed would be less than one hundredth ($1/100^{th}$) of one (1) percent of the allotment area (46,755 acres). There would be no effect from fence reconstruction which does not require mowing.

Installation of a new road cattleguard on Road 1830 would have no measurable impact. There would be an increase in

maintenance costs associated with this cattleguard. Costs would be incurred by the permittee.

Reconstruction of fences damaged or destroyed by the Skeleton Fire would permit utilization of pastures one, two and three of the current Coyote Allotment which would be combined with the current Cinder Hill Allotment to create the new Cinder Cone Allotment.

Reconstruction of approximately six (6) miles of existing fences, in three sections, would improve passage for big game, including mule deer and antelope, by making sections currently not wildlife friendly wildlife friendly. Fences standards would follow those described in FSM 2209.22.

Relocation of the pasture fence at Arnold Ice Cave to a location approximately one quarter mile to the south would reduce human/livestock interactions at the cave site. It would also reduce the funneling of livestock into the parking area at the cave.

Removal of approximately one half mile of abandoned fence in pasture three (new name - Orphan) would remove an eyesore and eliminate the potential to injury or kill wildlife and also eliminate a safety hazard to people using the area.

Prohibiting grazing in pasture one of the current Coyote Allotment (new name - Stairstep) and pasture one of the current Cinder Hill Allotment (new name - Evans) until 2006 would not prohibit the permittee from stocking the new combined allotment to 600 cow/calf pairs.

Establishment of four (4) new water sets within the Stairstep pasture of the new allotment would allow be better distribution of livestock. The water set proposed for the dispersed site adjacent to the 1820 020 road would have no measurable effect. The site is a dispersed camping site with compacted soils, cheat grass, and little or no vegetation.

The three (3) other new water sets would also have no measurable impacts. The selected sites are near the historic sites which are closed due to natural revegetation after the Skeleton Fire. All three sites have cheat grass and early native colonizers. They are minimally visible from major roads and are capable of supporting water tanks and a water truck.

The three (3) proposed water sets would require reopening three (3) roads obliterated as part of the Skeleton Fire rehabilitation. Approximately 1.25 miles would be reopened. The reopening of the roads would have little or no measurable impact. They would extend only to the individual water set and remain obliterated beyond that point.

The three (3) proposed sites would reopen the least number and miles of closed roads when compared with other possible sites. They provide proper livestock distribution while reducing water haul distances.

Three (3) additional water sets proposed for pasture five (new name - Trails) would have limited impacts. The first, located adjacent to the 2500 road, is a dispersed site that is barricaded to OHV and other recreational use. It would provide low level, short duration use when other water sets were unavailable due to dispersed campers or for other reasons.

The other two new water set locations, one of the 2510 080 road and the other on the 2500 800 road, would replace the 2500 800 water set near the Road 25 staging area. Fuel treatments have been applied to both sites. Livestock usage at each site would be expected to create approximately one (1) acre of compacted soils and a similar-sized area denuded of vegetation and/or vegetation trampled, heavily grazed, or rubbed.

These three (3) water sets would reduce or eliminate livestock/human interactions experienced at the current water set on the 800 road. Trailing of livestock would be reduced in the Road 25 staging area. This would result in less confusion amongst OHV

riders trying to identify designated OHV trails which in turn would reduce impacts to soils (displacement, compaction, etc.), wildlife (habitat fragmentation, disturbance, etc.), and vegetation.

There would be a small decrease in the number of acres associated with water sets in this combined allotment. The allotment currently contains 42 water sets (37 in the current allotment and five from the Coyote Allotment). Seven (7) new ones would be added and eight (8) existing ones would be eliminated. The reconfigured allotment would contain 41 water sets. The number of acres of compacted soils and denuded of vegetation would decline from approximately 42 to 41 or a reduction of approximately two and one half percent (2.5 percent). The decline within the allotment would be negligible, remaining less than one tenth of one percent (0.1 percent)

Closed water sets would be allowed to naturally recover. Based on experiences with other water sets, vegetative recovery would be expected within the next decade; longer if the site experiences other use such as dispersed camping. Soil compaction would take longer; potentially five decades or longer depending upon soil type and condition, weather, and freezing and thawing actions.

Pine Mountain Allotment

This alternative would have little or no measurable effect on current grazing operations or practices. There would be no change in the current stocking levels. There would be no change in the number of pastures. Grazing would continue under a rest rotation system that would rest one pasture each grazing season.

The risk of livestock browsing bitterbrush late in the season would be reduced because the grazing season would be reduced by 25 days, from October 25 to September 30.

Construction of approximately five (5) miles of new fence on the south boundary of the allotment would reduce the size of the allotment from 17,023 acres to approximately 16, 812 acres, a reduction of approximately 211 acres. It would also collectively reduce the sizes of the South and Coop pastures by the same amount. This new fence would also reduce the potential loss of livestock from the Coop pasture to the south.

Construction of approximately three (3) miles of new fence along the west and east boundaries of the Coop pasture would prevent livestock from trespassing into the adjacent South pasture and the adjacent Cinder Hill Allotment. The new fences would be expected to provide opportunities for better vegetation management, including the ability to better manage bitterbrush for mule deer forage in winter range habitat.

The new fences would reduce the size of the South pasture and increase the size of the Coop pasture. Both pastures would be separated, and being more equal in size, would be better balanced for livestock numbers and utilization.

The new pasture/allotment fence on the south boundary of the South pasture would eliminate existing and potential impacts of livestock and grazing on the pumice grape fern population in the pasture. The population would be eliminated from the pasture by the new fence.

Construction of the pasture fence between the South and Coop pastures would involve the relocation of an existing cattleguard which would be removed from a location approximately one (1) mile to the north on the 23 road. This would facilitate traffic on the 23 road without affecting the integrity of the pastures. There would be no increase in maintenance costs for the cattleguard as it is an existing guard that would be relocated.

The new pasture fence between the two pastures would be located along the east side of the 23 road. It would reduce or eliminate livestock crossing the road. It would also reduce the time that livestock use the 23 road when grazing the Coop pasture. This would be expected to result in

a decreased the risk of accidents between livestock and motorized vehicles.

Construction of approximately eight (8) miles of new fence would require the mowing of approximately one (1) acre of vegetation. This would have no measurable effect on any resource. Mowed vegetation would be at least six to eight (6-8) inches in height with a strip width of approximately eight (8) feet. The area mowed would be less than one hundredth ($1/100^{th}$) of one (1) percent of the allotment area (46,755 acres). There would be no effect from fence reconstruction which does not require mowing.

Approximately one quarter (0.25) mile of existing fence line would be removed from the Coop pasture as it is unneeded. An existing cattleguard would also be removed and relocated further south on the 23 road. Removal of the fence and cattleguard would improve wildlife movement within the Coop pasture and reduce the risk of injury or death to wildlife.

Reconstruction of approximately eight (8) miles of existing fences with wildlife friendly fences would facilitate wildlife movement within and between pastures and allotments. All fences would be reconstructed using standards described in FSM 2209.22.

No water sets are proposed to be eliminated or added. There would be no effects beyond those currently existing or being experienced when the water sets are active.

A new water set would be required in the southern portion of the Coop pasture when the new pasture/allotment boundary fence is constructed. A suitable location cannot be identified as part of this process. Additional analysis would be conducted prior to establishing a new water set in that pasture.

Retention and repair of the existing trick tanks in the Pine and Micro pastures would provide supplemental water sources for both livestock and wildlife. They would also help provide for better livestock distribution.

Removal of the trick tank on the southern slopes of Pine Mountain would have no effect on livestock or wildlife. The tank is in an extreme state of disrepair and is not usable by either livestock or wildlife.

CUMULATIVE EFFECTS

Water sets would continue to be utilized by recreational visitors for camping, parking, and other related activities when not being used for grazing operations. This would continue to be particularly true during hunting season. This would result in additional soil compaction, additional disturbance and damage to vegetation, and continuing expansion of the water set.

Expansion of water sets because of recreational use would not have a measurable impact. Water sets currently occupy less than one tenth of one percent (0.1 percent) of both each allotment and the project area. Increasing the size of the area by 10 feet in all directions would result in an increase of impacted area to approximately 1.17 acres or an increase of approximately 17 percent per site. The area impacted would continue to remain below one tenth of one percent across both each allotment and the project area.

Proposed actions under these projects, prescribed fire, mowing, and commercial and non-commercial tree thinning, have the potential to decrease available bitterbrush browse production for up to 15 years after implementation. Shrubs would be lost from burning, construction of temporary roads, and the creation and use of landings and skid trails. Mowing and burning would also be expected to result in short term losses, perhaps 1-2 years before individual plants recovered. Reductions in bitterbrush numbers and distribution could result in a reduction in livestock stocking levels to reduce the risk of livestock browsing the remaining plants and further reducing bitterbrush forage levels and winter forage for mule deer.

Vegetation treatments would be expected to increase available forage for livestock and forage and browse for big game, including deer, elk, and antelope. Reducing overstory

tree canopy cover would increase the amount of light, nutrients, and space available, resulting in increased production of grasses and forbs and potentially result in increased regeneration of shrubs such as bitterbrush. Increased production would be expected within several years of implementation and would continue until canopy closure became re-established, perhaps 15-20 years. Once canopy closure was restored, forage and browse production would decline in quantity and quality until reaching pretreatment levels.

Burning and mowing would also be expected to result in improved forage and browse production by eliminating, thinning or pruning dead plants, stems, and branches and stimulating the development of new shoots, stems, and branches. Production of forage, grasses and forbs preferred by livestock, would improve. This would reduce the risk of livestock browsing bitterbrush. This increased forage production would continue until conditions returned to pre-treatment levels, perhaps 10-20 years.

This alternative could result in the permittee on the Cinder Hill Allotment requesting an increase in use on adjacent BLM lands because of the increased stocking that would be permitted on the Cinder Hill Allotment. There would be no measurable effect as the BLM has historically been able to accommodate the projected level of use and would be expected to do so in the future.

There would be no change in use on BLM managed lands associated with permittees on either the Bessie or Pine Mountain Allotments. Stocking levels would remain the same (Pine Mountain) or decline (Bessie)

ALTERNATIVE 3 – NO GRAZING

DIRECT AND INDIRECT EFFECTS

This alternative would not allow for annual or periodic vegetation management through livestock grazing and would not implement the direction of the 1990 LRMP concerning a well managed fire protection program that is cost efficient, responsive to land stewardship needs, and resource management goals and objectives (1990 LRMP 4-9) for the three allotments. All allotments would be closed.

ISSUE 1: Vegetative conditions within the Cinder Hill Project area are outside the range of natural variability. This has resulted in higher fuel loadings and larger, more intense wildfires.

No acres would be grazed. All grazing operations would cease within two (2) seasons.

Termination of grazing would result in higher fuel loadings, particularly in the fine fuels such as grasses and forbs. Over time, increased fuel loadings would be expected to increase the risk, intensity, and severity of wildfire.

ISSUE 2: Grazing should be reduced or eliminated on public lands.

No acres would be available for grazing by livestock within two seasons of the decision. All permits would be terminated.

ISSUE 3: Grazing of livestock, particularly cattle, creates conflicts with wildlife, particularly mule deer and sage grouse.

No deer winter range would be grazed. No historic grouse habitat would be grazed. Competition for browse, particularly bitterbrush, between livestock and mule deer would be eliminated. All bitterbrush would be available for wildlife use. There would be no browsing of bitterbrush by livestock. Long term, this would likely result in the establishment of older, more decadent shrub communities and result in a decline in browse quality and quantity.

Wildlife movement would continue to be affected by existing fences until they were removed. Depending on budgets, priorities and personnel, the approximately 94 miles of existing fences would be removed within 10 years.

The risk of livestock trampling nests, eggs, young, or nesting sage grouse would be eliminated.

ISSUE 4: Increasing recreational activity is resulting in an increasing range of vehicle types and sizes. Such use is resulting in increasing risks of accidents and conflicts between grazing operations and other forest users.

Accidents and conflicts between grazing operations and other forest users would be eliminated.

OTHER EFFECTS

Closure of the allotments would reduce permittee revenue as they would need to reduce herd sizes, find replacement pasture or cease operations. Economic diversity within the local community would also decline. Historic patterns in similar situations suggest that loss of public pasture hastens the conversion of private ranches to residential development.

Forage utilization would be eliminated except for that associated with wildlife. Over time, forage, and to a more limited extent, browse, quality would begin to decline as plants aged and reduced the number of new stems and shoots. Production would also be expected to decline.

Closing the three allotments would reduce the forest grazing program by approximately 11 percent, from approximately 816,109 acres in 26 open allotments to approximately 726,789 acres and 23 open allotments. This would also result in a drop in funding for the forest grazing program.

This alternative would not modify grazing permits and allotment management plans (AMPs). Existing permits and AMPs would be terminated.

Current permittees would be allowed up to two grazing seasons to remove all livestock. Improvements, such as fences and cattleguards, would remain as property of the government. Water troughs, as temporary improvements, would remain the property of the permittee.

Existing permittees would lose four (4) months of grazing, one third of the forage period for livestock. This would be expected to have a substantial effect on their existing operations because of the change and the loss of quality forage. It would affect operations on both private lands and BLM lands on which the permittees currently operation. Specific responses by the current permittees to a termination of permits is unknown. They could include reduction in herd size, reduction in income, increased operating costs, and increased pressure on other available pastures.

This alternative would provide no opportunity to utilize livestock to manage invasive species including noxious weeds

Seventy (70) water sets, encompassing approximately 70 acres of compacted soils and denuded of vegetation begin or continue natural recovery through revegetation by native species and freezing and thawing action. Twenty-one (21) water sets in the Coyote Allotment have not been used since the allotment was vacated in 1991. These water sets have largely revegetated and would continue to develop native vegetation communities.

In the short term, water set sites would likely be dominated by cheat grass. Experience suggests that native vegetation would gradually exert dominance and relegate cheat grass to an increasing limited distribution and presence over time. Without major disturbance, cheat grass would be expected to be limited to scattered, random individuals.

Recolonization by native vegetation in the other 49 water sets would be expected within 10-20 years.

Restoration of compacted soils in all water sets would be expected to take 50 years or more. Improvement in soil productivity would be negligible; water sets constitute less than one tenth of one (0,1) percent of each allotment and the project area.

Soil displacement associated with digging by livestock for insect protection and bull displays would cease.

Closing of the 49 water sets in the Cinder Hill and Pine Mountain Allotments would eliminate supplemental water sources for wildlife. During summer and fall months, water sets are the only source of water in much of the project area.

The 21 water sets in the Coyote Allotment are currently not used and currently do not provide water for wildlife.

Closure of the water sets would also eliminate the risk of wildlife becoming trapped in the water trough and drowning.

Closure of water sets would also eliminate a source of salt for wildlife. Some digging by wildlife for residual salt would continue but would decline as the salt disappeared.

The threat and spread of invasive plants, including noxious weeds, from grazing operations would be eliminated.

Terminating grazing would also remove water trucks from roads. This would reduce the risk of accidents with other road users. It would also reduce soil losses to wind erosion and displacement. These reductions would be limited and immeasurable given other vehicle traffic which would continue. Roads would continue to become rutted but likely at slower rates. The limited use of roads by water trucks would not be expected to measurably reduce maintenance costs or frequency of maintenance.

Conflicts between grazing and other resources would be eliminated. Planted seedlings would not need to be fenced to prevent livestock from browsing them. Pastures would not need to be closed to grazing to treat fuels or protect seedlings. Recreational activities, including dispersed camping, OHV use, cave visitors, etc., would not be disrupted or disturbed by livestock (Issue 4).

The following section discusses effects specific to each allotment.

Coyote Allotment

There are no direct or indirect effects specific only to this allotment.

Cinder Hill Allotment

There are no direct or indirect effects specific only to this allotment.

Pine Mountain Allotment

Threats or damage to sensitive species from grazing operations, particularly green tinged paint brush and pumice grape fern, would be eliminated. It is unknown how these species or their habitats would respond to cessation of grazing.

A limited source of water for wildlife would remain. The two (2) trick tanks in this allotment would remain.

CUMULATIVE EFFECTS

There are no identifiable cumulative effects in any of the three allotments under this alternative. No vegetation would be grazed; therefore, vegetation and fuels treatments identified or proposed under the Fuzzy EA (2000) or the Kelsey or Opine Vegetation Management EAs would not have any cumulative effects under this alternative.

OHV improvements proposed under the Opine Access Management EA, the OHV trail system proposed under the Kelsey Access Management EA, and East Fort Trail System improvements and additions proposed under other environmental analyses and documents would also have no cumulative effects under this alternative. All improvements would be removed eliminating the need for new OHV cattleguards.

ALTERNATIVE 4 – GRADUAL GRAZING REDUCTION

DIRECT AND INDIRECT EFFECTS

Coyote Allotment (western portion)

The direct and indirect effects of this alternative would be the same as those described in Alternative 3 – No Grazing.

Cinder Cone and Pine Mountain Allotments

The direct and indirect effects of this alternative in these two allotments are the same as those described in Alternative 2 – Proposed Action.

Should either current permittee decide to sell their ranch, the permit to graze the allotment could be reissued to the purchaser of the ranch property. Should the current permittee decide to vacate the allotment, the permit would revert to the Government due to non-use. The permit and the allotment would be terminated.

There is no information available to suggest that either allotment would be vacated by the current permittee during the period of the new permit (10 years), or prior to the 2014 grazing season.

CUMULATIVE EFFECTS

Cumulative effects for the western portion of the Coyote Allotment would be the same as described in Alternative 3 – No Grazing.

Cumulative effects for the Cinder Cone and Pine Mountain Allotments would be the same as those described in Alternative 2 – Proposed Action.

WILDLIFE

EXISTING CONDITIONS

THREATENED AND ENDANGERED SPECIES

It is Forest Service policy to avoid all adverse impacts to threatened and endangered species and their habitats, except when it is possible to compensate adverse effects through alternatives identified in a biological opinion rendered by the U.S. Fish and Wildlife Service (USFWS). Measures are to be identified and prescribed to prevent adverse modification or destruction of critical and other habitats essential for the conservation of endangered, threatened, and proposed species (FSM 2670.31).

Actions and programs authorized, funded, or carried out by the Forest Service are to be reviewed to determine their potential for effects on threatened, endangered and proposed species through the biological evaluation/assessment process (FSM 2670.31).

Species classified as sensitive by the Forest Service are to be considered through the National Environmental Policy Act process by conducting biological evaluations/assessments to determine the potential effect of all programs and activities on those species (FSM 2670.32). No impacts may be allowed on sensitive species that would result in loss of population viability or create significant trends toward Federal listing. The findings of biological evaluations are to be documented in a decision notice, or, if applicable, in official files.

The April 2001 – April 2003 Joint Aquatic and Terrestrial Programmatic BA established Project Design Criteria (I & II) to be applied to all projects for listed and candidate species. Criteria I must be applied to the project. Criteria II is discretionary to further reduce and/or negate adverse affects of any project that "may affect" listed and candidate species. Project Design Criteria (PDC) are used as sideboards and a filter in the planning process, biological assessment, and streamlining consultation process with the U.S. Fish and Wildlife Service.

Existing management direction is found in the "Revised Environmental Assessment for the Continuation of Interim Management Direction Establishing Riparian, Ecosystem and Wildlife Standards for Timber Sales" (Eastside Screens) and the Deschutes National Forest Land and Resource Management Plan (LRMP 1990).

The following section analyzes the effects of the alternatives for the Cinder Hill Range Analysis Project. Table 2 lists Federal Potential, Endangered, Threatened, and Sensitive (PETS) species found or potential found on the Deschutes National Forest. Candidate species are included in the biological evaluation (Wildlife Biological Evaluation (BE)).

Table 2 Federal Threatened, Endangered, Proposed, or Sensitive Animal Species Known or Potentially Present on the Bend-Fort Rock RD, Deschutes National Forest.

SPECIES	COMMON NAME	FEDERAL CLASSIFI-CATION
Birds		
Haliaeetus leucocephalus	Northern bald eagle	T
Strix occidentalis caurina	Northern spotted owl	T
Buteo regalis	Ferruginous hawk	SOC (wildlife report)
Falco peregrinus anatum	American peregrine falcon	S
Bucephala albeola	Bufflehead	S
Histrionocus histrionicus	Harlequin duck	S, SOC
Numenius americanus	Long-billed curlew	S
Centrocercus urophasianus	Western sage grouse	S, SOC
Podiceps auritus	Horned grebe	S
Podiceps grisegena	Red-necked grebe	S
Coturnicops noveboracensis	Yellow rail	S
Agelaius tricolor	Tricolored blackbird	S
Mammals		
Lynx canadensis	Canada lynx	T
Gulo gulo luteus	California wolverine	S, SOC
Martes pennanti	Pacific fisher	S
Corynorhinus townsendii	Western big-eared bat	SOC (wildlife report)
Sorex preblei	Preble's shrew	SOC (wildlife report)
Sylvilagus idahoensis	Pygmy rabbit	S, SOC
Amphibians		
Rana pretiosa	Oregon spotted frog	S, C
Key to abbreviations: T=Threatened, E=Endangered, P=Proposed for Federal listing, S=USFS Region 6 Sensitive, C=USFWS Candidate species, SOC=USFWS Species of Concern		

The project area was evaluated to determine which species might occur based on the presence of required habitats and known locations. Suitable habitat does exist for the Western sage grouse. There is potential habitat for the Pygmy rabbit.

WESTERN SAGE GROUSE

The sage grouse (***Centrocercus urophasianus***) is a Western bird that relies primarily on sagebrush for it's nutritional habitat needs. They are found throughout the range of big sagebrush. Populations began declining in the late 1800s, attributed primarily to loss, degradation, and fragmentation of habitat as well as excessive hunting (Wildlife Biological Evaluation, page 14).

In Oregon, sage grouse were common to abundant in the non-forested areas east of the Cascades but also began to decline during the late 1890's. Populations recovered in the teens, with birds being abundant in 1918 and early 1919, but a major die-off occurred in mid-1919. Population declines continued into the 1920s and extinction of the species in Oregon was predicted. Hunting restrictions brought a slight recovery, but populations declined seriously again during the 1930s. By 1940, sage grouse occupied only half their historic range in Oregon, and numbers declined 60percent between the late 1950's and the early 1980's (Wildlife BE, page 14).

Habitat requirements for sage grouse vary by season but all include the presence of sagebrush. During mating season, late winter to early spring, males gather at leks to strut and attract females. Leks are small open areas, approximately two to ten (2-10) acres (0.04-4 hectares) and preferably surrounded by dense sagebrush that provides food and cover from predators. Lek sites are present on BLM lands north of Pine Mountain. There are no known lek sites within the Cinder Hill project area.

Nesting females typically build nests in depressions hollowed out between or beneath sagebrush. Nesting cover provides concealment of the hen and the nest. Quality sites provide good overstory branches for cover and a good growth of both grasses and sagebrush within approximately 25-30 inches (approximately 70 cm) of the nest. The addition of grasses and other forbs provide increased nutrient availability that may help to improve the hen's productivity. Optimum breeding

habitat consists of sagebrush stands that are approximately 16 to 32 inches (40 to 80 cm) tall with a canopy cover of 10 to 25 percent. The herbaceous understory canopy cover consists of approximately 15 percent grass canopy and 10 percent other forb canopy. Optimum habitat is within or near late seral conditions (Wildlife BE, page 14).

Well-sheltered areas that provide protection from predators and the weather characterize brood rearing habitat. These sites tend to be in close proximity of nest sites and within or adjacent to nesting habitat. A minimum of 40 percent of the brood rearing habitat must be nesting habitat. Hens with broods may use relatively open sagebrush habitats having less sagebrush cover (about 14 percent) than optimum nesting habitat but need an understory canopy cover of at least 15 percent of grasses and forbs (Wildlife BE, page 14). This understory component is important in providing food for the growing chicks whose diet is predominately forbs and invertebrates (Wildlife BE, page 14).

Grouse winter range is characterized by large expanses of dense sagebrush. These areas typically have sagebrush canopy cover greater than 20 percent and an average height of approximately 10 inches (approximately 25 cm). Preferred winter range also is in a late seral condition. These sites also have little or no slope (Wildlife BE, pages 14-15).

Wintering sage grouse feed almost exclusively on sagebrush.

The seasonal movement of sage grouse is dependent on the quality of seasonal habitat and severity of winter. If all the characteristics of seasonal habitats exist in a single area, the population is relatively usually sedentary. Where one or more of the habitat characteristics are limiting or non-existent, the population may migrate. Some populations have been noted to migrate as far as 24-160 kilometers between nesting and wintering areas (Wildlife BE, page 15,). Migration is also weather dependant.

The BLM conducted a study on sage grouse in the high desert of Central Oregon between 1988 and 1993. The study was published in 1994. As a result of the amount of useful data collected, data collection continued until 1995; this information has not been published.

The study monitored leks and used radio tagged birds to determine populations within the study area and to locate nest sites and determine habitat utilization during breeding, nesting, brood rearing/summering, and wintering periods.

Portions of the Cinder Hill project area fall within the boundaries of the study area boundaries. Seasonal habitat was identified in all three allotments. Each allotment contained spring, summer and fall habitats. Only the Cinder Hill and Pine Mountain Allotments contained wintering habitat (Table 3).

Table 3 Acres of Seasonal Sage Grouse Habitat by Allotment.

	ALLOTMENT		
SEASONAL HABITAT	COYOTE	CINDER HILL	PINE MTN
SP.SU.FA.WT	0	107	609
SP.SU.FA.	2,063	5,694	8,273
Non-Habitat	33,018	33,133	8,124

Note: SP=Spring, SU=Summer, FA=Fall, and WT=Winter

The study determined that Pine Mountain was a major destination for nesting birds. Nine (9) nest locations were identified in non-forested areas of Pine Mountain. All nests identified during the study were located within the Pine Pasture with the exception of one (1) nest located in the South pasture near its border with the Pine Pasture.

Nesting grouse came from local leks and leks many miles away. The majority of the successful nests, and the majority of all nest sites, was within mountain big sagebrush habitat. However, successful nests also occurred within other habitat types on Pine Mountain (Wildlife BE, page 15).

These sites were characterized by an abundance of forbs and insects essential for hens and chicks during nesting and early brood rearing. Coupled with steep slopes allowing for flight to avoid predators, these sites were highly appealing to nesting birds (Wildlife BE, page 16).

Photo points established as part of Current Trend Transects have tracked the encroachment of ponderosa pine into pure stands of sagebrush (Figures 4-7).

Figure 4 CT2A. Transect 1 looking west toward Pine Point. Pine Mountain Allotment, 1961.

FIGURE 5 CT2A TRANSECT 1 LOOKING WEST, 1967.

Figure 6 CT2A Transect 1 looking west, 1993.

Figure 7 CT2A Transect 1 looking west, 2001. Notice the changes in shrub and tree density from 1961.

Fire suppression during the past 50-100 years has permitted ridge top ponderosa pine to expand downslope into sagebrush stands and reduce habitat effectives. Western juniper has also be come established and has begun moving upslope from the valley floor. Encroaching trees provide roosting sites for predatory birds that then become more effective foragers on grouse. Sage grouse use decreases as tree density increases .

Although nesting and brood rearing habitat is present in the Cinder Hill and Coyote

Allotments, there is no existing evidence of sage grouse presence or use in those allotments.

Two photo points were established in areas of known sage grouse nests to monitor the quantity of forage and browse utilized by livestock in those areas. Both were located within the Pine pasture of the Pine Mountain Allotment. Figures 8 and 9 illustrate conditions prior to grazing in 2002.

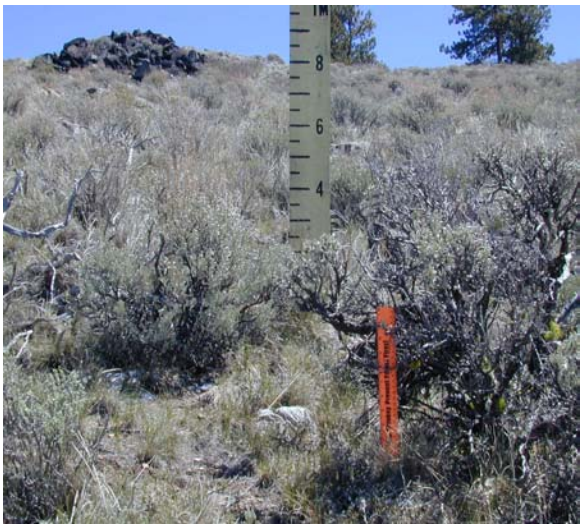


Figure 8 Photo Point West 01 Prior to Grazing

Figure 9 Photo Point Pine 01 Prior to Grazing

Figures 10 and 11 illustrate conditions at the same sites after grazing was completed in 2002.

Figure 10 Photo Point West 01 Post-Grazing, 2002

Figure 11 Photo Point Pine 01 Post-Grazing, 2002

Table 4 displays mean stubble heights found at each site both before and after grazing. Grazing occurred in the Pine pasture between June 1 and July 15, 2002.

Table 4 Stubble Height Monitoring Results, Pine Mountain Pasture, 2002.

Photo Monitoring Point	Mean Stubble Height Pre-grazing	Mean Stubble Height Post-grazing
Pine 01	5.5	5.5 inches
West 01	4 inches	4 inches

Two factors are believed to have contributed to the low mean stubble heights found at the West 01 site. First, the site has a south aspect with extremely rocky soils. Inherent productivity is expected to be low. Second, low moisture levels were present during the growing season during the previous two years (2000-1) and continued into 2002 (Wildlife BE, page 19).

ENVIRONMENTAL EFFECTS

ALTERNATIVE 1 – CURRENT MANAGEMENT; ALTERNATIVE 2 – PROPOSED ACTION; AND ALTERNATIVE 4 – MODIFIED PROPOSED ACTION.

DIRECT AND INDIRECT EFFECTS

Issue 1: Vegetation outside the range of natural variability resulting in higher fuel loadings and larger more intense wildfires.

Grazing helps to reduce the levels of fine fuels. It does not affect large fuels or fuel loadings associated with those fuels. None of the alternatives would reduce fuel loadings enough to reduce the risk of a high intensity, high severity wildfire which would likely remove most or all shrub cover for several decades.

Issue 2: Reducing or eliminating grazing on public lands: and

Issue 3: Conflicts between grazing and wildlife.

Reducing or eliminating grazing (Alternative 3) would reduce or eliminate the risks livestock pose to sage grouse and sage grouse habitat.

Livestock may trample or destroy nests and eggs. There have not been any documented cases of nest trampling within the historic nesting population. The likelihood of this occurring is low due to the size of the Pine pasture. There would be no effect.

All nests are located in the upper 1/3 of the slope and are on steep hillsides. These areas contain a mosaic of grass and shrub due to the historic fires that occurred on the mountain. Livestock tend to concentrate in areas that are predominantly grasses. As these areas are grazed, livestock shift to grazing areas in shrub-dominated sites. Maintaining minimum stubble height standards of 5.5-7.0 inches would retain hiding cover and forbs essential for nesting and early brood rearing. Failure to meet minimum stubble heights would increase the susceptibility of nesting birds and young to predation and increase the risk of nesting failure.

The project area contains no natural water sources (rivers, streams, lakes, etc.) Water sets are located to control both livestock distribution and forage utilization. In the Pine Allotment, only water sets on the lower slopes are utilized when sage grouse are nesting. This reduces the risk of livestock tramping or destroying nest sites and disturbing nesting hens.

The management recommendation for minimum grass height for nesting/early brood rearing habitat varies between management guides from approximately five and one half (5.5) to seven (7) inches (14 to18 cm) (Wildlife BE, page 17). If utilization by livestock reduces grass height to substandard levels, this could increase the potential for unsuccessful nesting in those locations. This level of utilization could potentially reduce the amount of forbs that are essential for nesting and early brood rearing as well as reduce the amount of cover and thereby increasing the susceptibility of predation to nesting hens and broods.

There would be no impact of livestock grazing on sagebrush. Sagebrush has low palatability and is very low on in preference. Livestock will eat it if nothing else is available. Continued use of a rest-rotation grazing system, monitoring of utilization and prompt removal of livestock when utilization standards are met would further reduce the potential of livestock grazing sagebrush and potentially reducing sage grouse habitat.

There would be limited effects on sage grouse or sage grouse habitat in the Coyote or Cinder Hill Allotments.

There are no identified nests in either allotment.

Spring, summer, and fall habitat was identified in the northeast portion of the Cinder Hill Allotment and the Coyote Allotment. The majority was identified as

mixed shrub with portions containing a ponderosa pine overstory. This is considered marginal habitat because of the pine and the amount of antelope bitterbrush associated within it (Wildlife Report, page 18).

There are no major migrational movements to or from this these areas. They do provide some forage opportunities for sage grouse.

Issue 4: Increasing risks of accidents and conflicts between grazing operations and other forest users.

This issue has no effect on sage grouse or sage grouse habitat.

CUMULATIVE EFFECTS

The Opine Project Area overlaps with the Pine Mountain Allotment. The Opine Vegetation Management EA proposes approximately 17,882 acres of fuels treatments on Pine Mountain. None of these treatments is proposed within known nesting habitat.

Approximately 7,125 acres of existing habitat would be treated by removing encroaching pine and juniper trees up to 16 inches DBH. This would maintain future nesting and brood rearing habitat on Pine Mountain.

Approximately 235 acres in historic habitat are proposed for juniper removal to improve range resources for livestock. This would also help to maintain future nesting and brood rearing habitat.

The Opine Vegetation Management EA also proposes to change the current “open unless posted closed” OHV policy on Pine Mountain to “closed unless posted open.” This would restrict OHV use to designated roads and trails. This would remove OHV use from existing habitat and greatly reduce the potential for OHVs to disturb nesting birds, damage or destroy nests and eggs, or disturb or kill young birds.

The Opine Access Management EA proposes to establish a designated and managed trail system on Pine Mountain. Access on the west side of Pine Mountain would be limited to a designated route using the 2300-080 road to the top of Pine Mountain. Access from the south would be restricted to Road 2017. No OHV access would be permitted from the north or east sides of Pine Mountain.

Implementation of this proposal would be expected to have no additional impact to sage grouse and sage grouse habitat and could potentially result in a reduction in impacts except in areas adjacent to designated routes. There are currently three (3) known OHV routes from the base of Pine Mountain to the top. All are located on the west side of the mountain. Access from BLM lands to the north, east and southeast is currently prohibited as there are no designated routes between National Forest lands and BLM managed lands. One of the three (3) existing routes, Road 2300-080, would become the designated route to the top of Pine Mountain. It currently has limited use. Use levels would potentially increase thereby increasing the potential of disturbing nesting sage grouse. Only one known (1) nest site is near the proposed trail. The level of impact would be extremely low and not measurable.

There have been no documented occurrences of disturbance by OHVs to sage grouse nests on Pine Mountain.

Vegetation treatments proposed for the Kelsey project area and those being implemented in the Fuzzy project area would have no measurable effects on sage grouse or sage grouse habitat. Habitat in the Coyote Allotment is considered marginal because of the pine overstory and amount of antelope bitterbrush. There are no known nest sites in the allotment.

The Kelsey Access Management EA proposes development of a designated and managed OHV trail system. This would have no measurable effect on sage grouse or sage grouse habitat. No habitat is located within the area proposed for the OHV system. No nesting birds have been identified within the Coyote Allotment.

The Skeleton Fire in 1996 burned almost all of the identified historic sage grouse habitat in the Coyote Allotment and approximately 25% of the habitat in the Cinder Hill Allotment. In addition to removing much of the pine overstory, the fire also removed much of the shrub understory. Post-fire recovery has largely been dominated by grasses and forbs; shrub recovery has been very slow. Any nesting habitat existing prior to the fire was likely destroyed. Existing habitat is predominately foraging.

The BLM is currently developing their Upper Deschutes Resource Area Management Plan/EIS. It includes managing sage grouse and sage grouse habitat and includes developing a strategy to manage OHV use.

The Millican OHV area, located immediately north of Pine Mountain and managed by the BLM, restricts OHV use during the nesting/breeding season (North Millican Dec.1-Apr.-30 and South Millican Dec.1-Jul.31). All known leks are located on the South Millican portion of the Millican OHV area.

The Management Plan/EIS proposes to reduce the number of open routes but end the December 1 – July 31 restriction. This would potentially reduce the level of disturbance to nesting birds, reduce habitat fragmentation, and minimize the risk of damage or destruction of nests and eggs.

ALTERNATIVE 3 – NO GRAZING

DIRECT AND INDIRECT EFFECTS

Issue 1: Vegetation being outside the range of natural variability and resulting in higher fuel loadings and larger, more intense wildfires.

This issue does affect sage grouse and sage grouse habitat. Fine fuels would continue to increase. This would increase the potential of a high intensity fire consuming all or most of the existing habitat.

Issue 2: Reducing or eliminating grazing on public lands; and

Issue 3: Conflicts between grazing and wildlife.

These issues also affect sage grouse and sage grouse habitat. Reducing or eliminating grazing (Alternative 3) would reduce or eliminate the risks livestock pose to sage grouse and sage grouse habitat.

There would be no effect on sage grouse or sage grouse habitats. All livestock would be removed. There would be no risk of trampling nests. Browsing of sagebrush by livestock would not occur. There would be no grazing of grasses and forbs.

Issue 4: Increasing risks of accidents and conflicts between grazing operations and other forest users.

This issue has no effect on sage grouse or sage grouse habitat.

CUMULATIVE EFFECTS

Cumulative effects under this alternative would be the same as the other alternatives. Elimination of grazing would have no measurable effects beyond those previously described.

PYGMY RABBIT

The pygmy rabbit is the smallest rabbit in North America and is restricted to the northern parts of the Great Basin. The project area is located in the furthest most northwest portion of its range except for a disjunct population in southeastern Washington. In Oregon, pygmy rabbits occur in seven counties south and west of the approximate line connecting Klamath Falls, Fremont, Redmond, and Baker (Wildlife BE, page 19).

Pygmy Rabbits are typically associated with clumped stands of big sagebrush (***Artemisia tridentata***) where soils are usually deep and friable. It digs its own burrows unlike other Leporids. The need for friable soil is essential for burrow excavation. Burrows are shallow and are usually in aggregations. In Oregon, sites occupied by pygmy rabbits had soils that were much deeper and looser than adjacent sites (Wildlife BE, page 20).

The diet of pygmy rabbits is almost exclusively leaves of big sagebrush. During summer months, up to 30-40 percent of the diet may be include grasses (Wildlife BE, page 20).

In Oregon, this species displays an affinity for areas with greater shrub cover and heights associated with dense stands of sagebrush and a smaller grass component It is suspected that the dense cover and taller shrubs assist in predator avoidance. This species is slower and therefore more vulnerable to predation than other rabbit species. The lower density of grass cover in the understory also allows this species to more easily see predators (Wildlife Biological Evaluation, page 20).

Dense stands of sagebrush also provide an added food resource. Pygmy rabbits forage extensively on sagebrush, even climbing the shrubs to do so. Shrub cover may be especially important in winter for a species poorly adapted for climbing when 99percent of the diet is sagebrush and snow accumulations may cover other food resources but permit easy access to distal parts of shrubs (Wildlife BE, page 20).

Using habitat descriptions, a GIS analysis was conducted to identify potential habitat within the project area. Seven areas, approximately 567 acres, were identified as containing pure sagebrush (Figure 14). Field review determined that the sagebrush species was mountain big sage rather than the Great Basin big sage used by the pygmy rabbit. There is no Great Basin big sage within the project area.

Two of the sites were higher elevation, upper slope stands of mountain big sage brush experiencing encroachment by ponderosa pine, western juniper and antelope bitterbrush. Soils provide poor burrowing habitat as they contain large amounts of rock and are not friable. Both sites are considered unsuitable habitat (Figure 12).

Figure 12 Unsuitable Pygmy Rabbit Habitat - Pine Mountain Allotment.

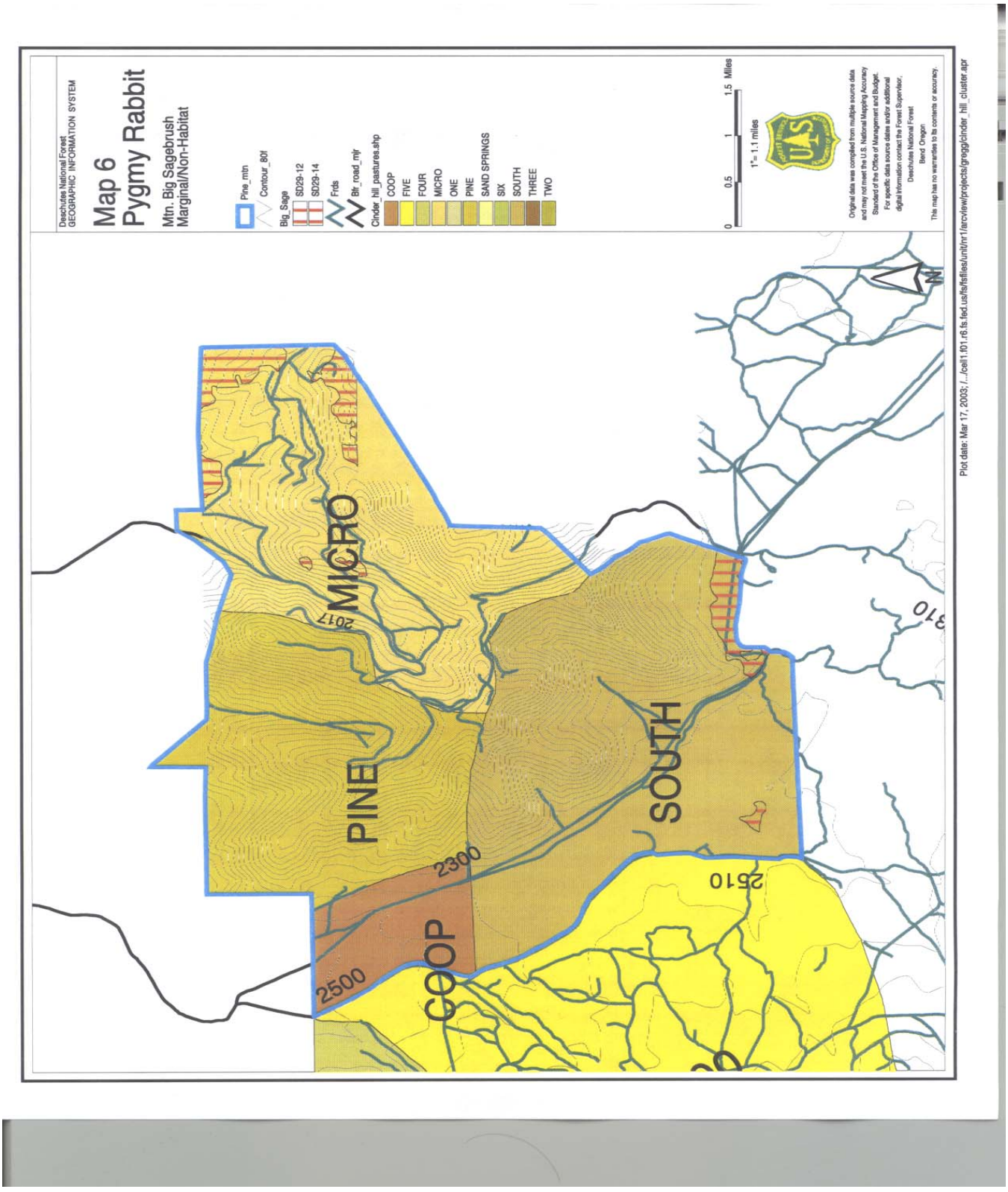
The third site (Figure 13) is located at a lower elevation and contains a higher percentage of sagebrush. Soils contain less rock and are more friable, making burrowing easier. This site also contains antelope bitterbrush.

Figure 13 Isolated, Marginal Pygmy Rabbit Habitat, Pine Mountain Allotment.

This site is part of a larger stand of mountain big sagebrush to extends northward onto BLM managed lands where other large stands of this species also currently exist. The isolation of the area coupled with the amount of antelope bitterbrush makes this habitat of marginal quality for pygmy rabbit.

The pygmy rabbit has discontinuous distribution within its range. Loss of favorable habitat to agriculture, over-grazing, and conversion of sagebrush to exotic grasslands presents a threat to this species. Roads and cleared areas appear to be barriers to dispersal.

Figure 14 Pygmy Rabbit Habitat, Cinder Hill Project Area (Map copied from Wildlife Report.)



There are no recorded sighting or reproductive burrows within the Cinder Hill Project Area.

ENVIRONMENTAL EFFECTS

ALL ALTERNATIVES

DIRECT AND INDIRECT EFFECTS

Issues 1-4 have no measurable effects on pygmy rabbits or their habitat.

There are no direct or indirect effects of this alternative on pygmy rabbits or their habitat. No pygmy rabbits have been identified nor have any burrows been located within the project area. There is no Great Basin big sagebrush present within the project area. Two of the three areas identified as potential habitat are experiencing encroachment by ponderosa pine, western juniper, and antelope bitterbrush and, as a result, changing the species composition and community structure away from that favored by pygmy rabbits. Soils on these sites also contain large amounts of rock making burrowing difficult.

The Pine Mountain area, which contains all the identified pygmy rabbit habitat, is currently open to unrestricted OHV activity. Motorized vehicles may currently drive anywhere except where posted closed or terrain restricts or prohibits access. As roads appear to inhibit or prohibit movement and expansion of pygmy rabbit populations, such unrestricted activity would be expected to increase the risk of habitat fragmentation and the potential extirpation of any existing populations. It would also reduce the potential of establishing any new populations.

CUMULATIVE EFFECTS

The proposed Kelsey Vegetation Management and Access Management EAs would not affect pygmy rabbits or their habitat. Neither rabbits nor their habitat have been found within the Kelsey project area.

The Fuzzy EA does not affect pygmy rabbits or their habitat. Neither rabbits nor their habitat have been found within the Kelsey project area.

Vegetation treatments proposed under Opine Vegetation Management EA would have no measurable effect on pygmy rabbits or their habitat. Habitat in the project area is either unsuitable or marginal. Soils are too rocky for burrows. The amount of bitterbrush present in shrub communities is too high. The sage brush that is present is mountain big sage brush, not Great Basin big sage brush.

The Opine Vegetation Management EA would also close the Pine Mountain area to OHV use except on designated roads and trails. This would reduce the number roads and trails, and would over time, allow for the reconnection of smaller segments of existing habitat. It would immediately reduce or eliminate the risk of further fragmenting existing habitat. It would also make movement of individuals and expansions of populations into new habitats easier.

The Opine Access EA would create a designated and managed OHV trail system on Pine Mountain. In conjunction with the general closure of the area to OHV use except on designated routes, it would allow for the reconnection of smaller habitat segments and reduce or eliminate the risk of further habitat fragmentation. It would also make movement of individuals and expansions of populations into new habitats easier.

OTHER WILDLIFE SPECIES

This section addresses the proposed Cinder Hill project's effects upon Management Indicator Species (MIS)(LRMP), ecological indicators (FSM, species and/or habitats), and Species of Concern (Fish and Wildlife Service designation, (SOC)).

This analysis also evaluates Old Growth Management Areas (OGMA's), Management Indicator Species (MIS), Species of Concern (SOC), and Land Birds addressed by Conservation Strategies for Columbia Plateau of Eastern Oregon prepared by Partners in Flight. The analysis

was conducted using both on-the-ground knowledge and GIS (PMR/IPAFL) data.

Current literature was used for management recommendations for SOC designated by the U.S. Fish and Wildlife Service (USFWS) and which are not addressed by the LRMP.

The following LRMP Standards and Guidelines for wildlife in this project area.

Deer Winter Range – Management Area 7

- M7-8 Forage utilization by livestock will be maintained at a level so that sufficient forage is available to support the desired number of deer. Grazing system, stocking levels, forage use standard, and range improvement projects will be designated to be compatible with or complementary to the habitat objectives for deer.

- M7-9 Allotment management plans will be written to reflect the management direction for this Management Area. They will include the grazing system to be used, season of use, class of livestock, stocking levels, range improvements needed, and forage production and utilization standards.

- M7-14 Forage conditions will be maintained or improved with emphasis on increasing the variety of plants available for forage and a mixture of age classes of shrubs. Variety in areas, which are dominated by poor vigor shrubs, will be created. Species will be established so that a variety of shrubs, grasses, and forbs are available.

Scenic Views – Management Area 9

- M9-74 Structural range improvements such as fences, water developments and access roads may be visible from sensitive viewer locations, but will remain subordinate to the overall strength of the landscape viewed, or designed to compliment scenic quality.

- M9-75 Utilization Standard will be established to avoid an over-used appearance.

- M9-76 Salt block, water developments, or other improvements that attract livestock and result in a trampled appearing setting should be avoided in highly sensitive scenic areas. New corrals and loading chutes will be made of native materials and will be designed to be visually pleasing.

- M9-78 Allotment management plans will be written to reflect the management direction for this Management area. They will include the grazing system to be used, season of use, class of livestock, stocking levels, range improvements needed and forage production utilization standards.

Old Growth – Management Area 15

- M15-7 Livestock grazing is generally not compatible with old growth areas.

Range

- RG-13 Allowable use of available forage by livestock within Range Resource Management Level D.

MANAGEMENT INDICATOR SPECIES

Table 5 displays the species identified as management indicator species in the Deschutes LRMP. There are no reptile or amphibian species listed as management indicator species.

Table 5 Management Indicator Species, Deschutes National Forest Land and Resource Management Plan

Mammals	Status
Elk*	MIS
Marten	MIS
Mule Deer*	MIS
Birds	
Northern Goshawk*	MIS
Cooper's Hawk*	MIS
Sharp-shinned Hawk*	MIS

Great Gray Owl	**MIS**
Great Blue Heron	**MIS**
Cavity Nesters (woodpeckers)*	**MIS**
Waterfowl	**MIS**
Red-tailed Hawk*	**MIS**
Osprey	**MIS**
Golden Eagle*	**MIS**

MIS = Management Indicator Species, Deschutes National Forest LRMP.
*** = Occurs or potentially occurs in project area**

Big Game

Both deer and elk commonly occur within the project area. Deer are more abundant than elk. Elk use within the area does not occur through out the project area. It appears to be tied to topographical and/or elevational areas (Wildlife Report, pages 23-24).

Palatability of forage for deer and elk overlap with that of cattle. Deer are browsers that consume primarily shrubs and forbs. However, during green up of spring grass, they often forage on the succulent grass shoots.

Elk and cattle have strong dietary similarities. Elk probably compete more with cattle than with any other large herbivore. Depending on the make up of plant communities across the range, they can consume a large amount of forbs and shrubs. This occurs primarily when green grasses and sedges are unavailable. Elk and cattle avoid the use of shrubs that are high in volatile oils such as juniper, rabbitbrush, and sagebrush. They lack mechanisms to reduce the toxic effects of these substances.

Habitat utilization by deer and elk can vary if shared with cattle. The relationship between cattle and elk is inverse with elk use considerably lower on ranges cohabitated with cattle. Movement of cattle into unused pastures caused movement of elk to ungrazed or lightly grazed pastures in Oregon. Both deer and elk prefer pastures unoccupied by livestock (Wildlife Report, page 24). There is a greater effect on elk due to the overlap in diet and the direct impact on forage by livestock.

Timing and duration of grazing as well as livestock can also have an effect on mule deer habitat. If cattle are allowed to graze too early, reducing the spring regeneration of grasses, or too late, shifting their diet to shrubs and forbs, then impact to mule deer could be great in the time of year they, the deer, are dependent on these plant types. In Oregon, mule deer and elk preferred deferred-rotation cattle grazing, where deferred-rotation provided unused pastures free from the disturbance and competition of cattle (Wildlife Report, page 24).

Standard and Guide RG-13 (LRMP 1990 pp 4-50/1) specifies allowable use of available forage by livestock within Range Resource Management Level D. This level provides:

1.) Livestock managed to optimize forage production and utilization.
2.) 2.) Cost effective culture practices improving forage supply, forage use & livestock distribution may be combined with fencing and water development to implement complex grazing systems.
3.) Range within satisfactory condition within forest and shrub, maximum annual utilization is 50 percent for both areas.

Utilization is measured on the dominant grass species, Idaho fescue. Average growth height is approximately six (6) inches (15 cm) annually. The minimum stubble height for the project area for Idaho fescue is three (3) inches. Depending on the site, it's potential, and historic measurements within that area, minimum stubble height could vary.

Deer

Approximately 81 percent of the project area, approximately 72,123 acres, is designated as deer winter range in the LRMP. The designated winter range is divided into seven (7) winter range habitat units (WRHU) (Figure 15). Table 6 displays the acres of deer winter range within each WRHU.

Figure 15 Big Game WRHUs, Fuels Treatment Units, and Range Allotments, Cinder Hill Project Area.

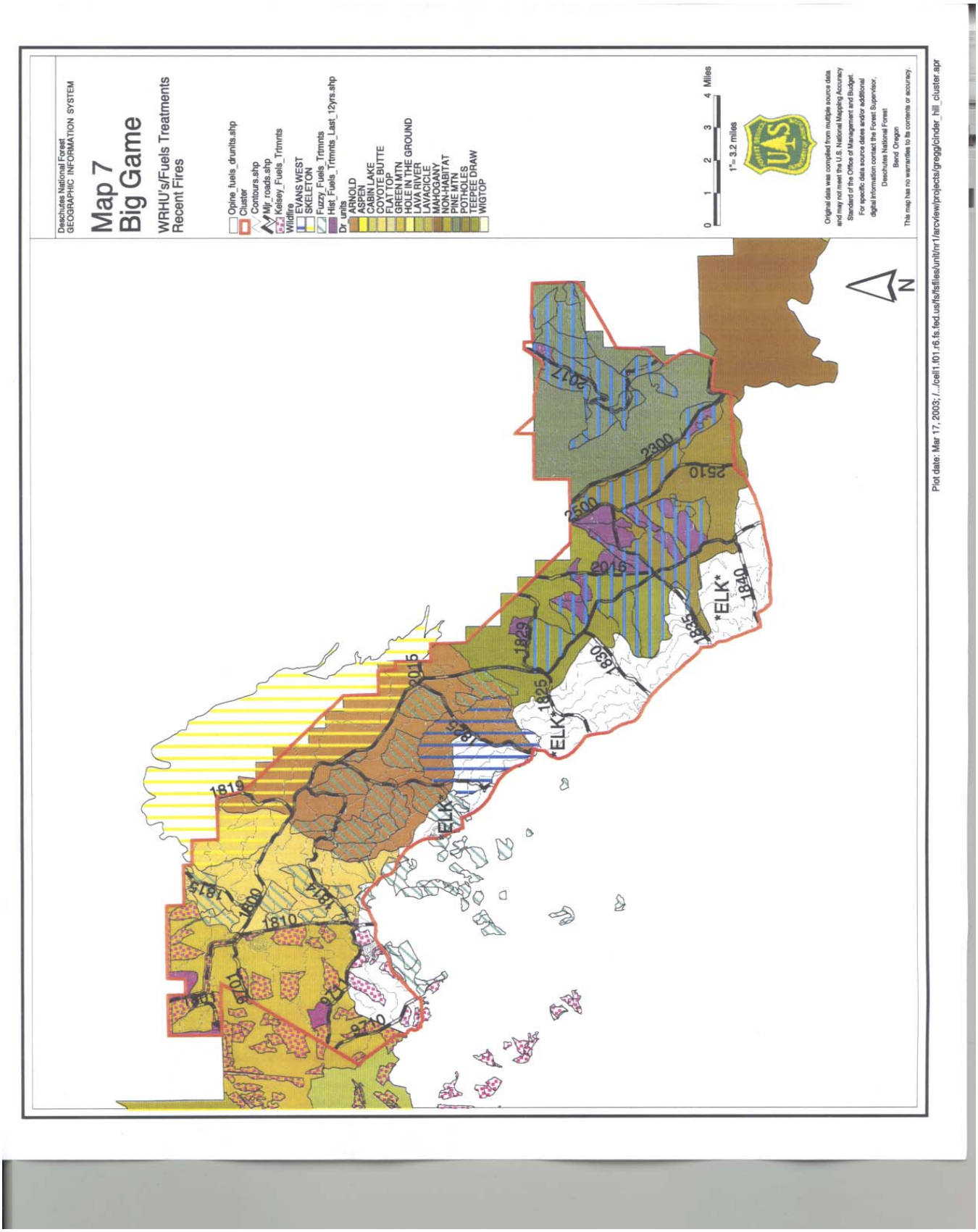


Table 6 Acres of Deer Winter Range by Winter Range Habitat Unit (WRHU), Cinder Hill Project Area

WHRU	ACRES
Arnold	17,264
Coyote Butte	9,459
Green Mtn.	11,169
Mahogany	83
Pine Mtn.	13,018
Potholes	9,765
Teepee Draw	11,365
TOTAL	72,123

Three other project planning areas overlap both the Cinder Hill project area and the seven WHRUs. The Fuzzy project area planning was completed in 2000 and resulted in a decision to implement approximately 9,250 acres of vegetation treatments and approximately 15,000 acres of fuels reduction treatments.

The Kelsey project area is located at the western end of the Cinder Hill project area. It is currently in the planning process. It is proposing approximately 4,300 acres of vegetation treatments, including tree thinning and fuels reduction, within the winter range allocation.

The Opine project area is located in the eastern half of the Cinder Hill project area. It proposes approximately 20,200 acres of vegetation treatments, including tree thinning and fuels reduction treatments, most of which is within the winter range allocation.

Both the Kelsey and Opine projects also propose road closures and restricting OHV use to designated roads and trails by designing designated and managed trail systems. Approximately 55 miles of designated roads and trails would be established within the winter range allocation in the Kelsey project area and five miles within the Opine project area.

Two (2) wildfires, Skeleton and Evans West, occurred within deer winter range habitat. Both occurred in 1996 and both resulted in the reduction of short-term available browse. Field review indicates that bitterbrush has regenerated and is abundant in the Evans West fire area. Bitterbrush regeneration is low and sporadic within the Skeleton fire area. Bitterbrush was planted within the Skeleton fire boundary; success has been limited.

In addition to the two wildfires, four (4) natural fuels reduction projects were implemented within the project area and within deer winter range: Interface, Ponderosa Demo, Monument, and Potholes. Field review indicates that units treated since 1995 were still displaying early seral conditions. All were vegetated. Shrub production is variable; existing shrubs are low growing and display early seral characteristics.

The Deschutes National Forest and the Oregon Department of Fish and Wildlife (ODFW) have a Memorandum of Agreement (MOU) to manage shrub vegetation within WRHUs to maintain a one third, one third, one third mix of early, mid and late seral vegetation within project treatment areas involving mowing and burning. Table 7 displays the amount of early seral habitat by WRHU as a result of project treatments and the Skeleton and Evans West wildfires (Figure 15 page 3-36).

Table 7 Levels of Early Seral Habitat from Wildfire and Project Treatments by WHRU, Deer Winter Range only.

WRHU*	Total Acres of WHRU	Acres Early Seral Habitat due to Treatments & Wildfire.	Percent Of WHRU in Early Seral Habitat due to Treatments & Wildfire.
Green Mountain	17162.71	604	3.5%
Coyote Butte	9474.09	2966	31.3%
Arnold	17640.47	7942	45.0%
Teepee Draw	11761.69	2995	19.6%
Potholes	10088.00	1565	15.5%
Pine Mtn.	13443.71	142	1.0%

***The Mahogany WRHU has only 83 acres within the Cinder Hill Project area and has had no treatments or wildfires on those acres.**

Areas on Pine Mountain have experienced wildfire; however, shrub regeneration is low and sites often dominated by grasses because of low site potential and weather patterns.

ALTERNATIVE 1 – CURRENT MANAGEMENT

DIRECT AND INDIRECT EFFECTS

Grazing pressure overall throughout the project area would be low. Grazing would not be restored in the Coyote Allotment. Stocking would remain the same in both the Cinder Hill and Pine Mountain Allotments at 266 and 600 head respectively. Both active allotments would be managed under a rest rotation system with one pasture being rested each year in each allotment.

A small number of livestock have an affinity for bitterbrush and will browse it during normal grazing. If the permittee's herd contains livestock with this affinity, there is a potential that bitterbrush would be browsed. Given the low numbers of livestock with this affinity, utilization would be expected to be low and difficult to measure. However, if precipitation is limited and grasses dry early in the season, more livestock could browse bitterbrush and deplete the quantity of browse avoid for mule deer during the winter and early spring.

Lower elevation water sets are being used in the Pine pasture of the Pine Mountain Allotment to alleviate grazing pressure on sage grouse habitat on the upper slopes of Pine Mountain. Use of these water sets draws livestock to the lower elevation mule deer winter range area. During dry seasons or years, a shift by livestock from forage species to browse, specifically bitterbrush, could result in a reduction of browse available to mule deer during the winter and early spring when other food sources are limited or unavailable. Monitoring of forage utilization would reduce or eliminate livestock browsing of bitterbrush and retain more available browse for deer.

CUMULATIVE EFFECTS

Monitoring of long-term study plots (Current Trend Analysis Plots) indicates that shrub production has increased throughout the project area since the late 1950's. Herbicide treatments in the 1950's and 1960's were applied to the area to promote grasses. Halting herbicide applications coupled with continued fire suppression resulted in an increase in shrub densities across the project area. Figures 16-19 illustrate the change from the 1950's to the 1990's.

Figure 16 CT3A - Pine Mountain Allotment, 1955. Transect 1 looking east.

Figure 17 CT3A - Pine Mountain Allotment, 1962. Transect 1 looking east. Herbicides were applied after the photo was taken.

Figure 18 CT3A - Pine Mountain Allotment, 1967. Transect 1 looking east. The effects of the herbicide applied in 1962 are still visible.

Figure 19 CT3A - Pine Mountain Allotment, 1993. Transect 1 looking east.

Vigorous shrub communities are generally only lacking in wildfire areas, particularly within the boundaries of the 1996 Skeleton fire.

Winter range habitats within the Cinder Hill project area would be affected by vegetation and fuels reduction treatments associated with other planning projects. Three (3) such projects overlap the Cinder Hill area; Fuzzy, Kelsey, and Opine.

The Fuzzy project are encompasses the east half of the Coyote Allotment and the western end of the Cinder Hill Allotment. The Fuzzy Environmental Assessment (2000) proposed 9,250 acres of commercial and non-commercial tree thinning and 15,000 acres of fuels reduction projects using mowing, prescribed burning or a combination of the two.

The Kelsey project area encompasses the western portion of the Coyote Allotment, essentially all of the proposed Bessie Allotment. The Kelsey Vegetation Management EA proposes approximately 4,200 vegetation treatments, including tree thinning and fuels reduction treatments, in the deer winter range allocation.

The Opine project area encompasses the remainder of the Cinder Hill Allotment and all of the Pine Mountain Allotment. It proposes approximately 20,200 acres of vegetation treatments including tree thinning and fuels reduction treatments. Much of the proposed treatment areas are located within the deer winter range allocation.

Tree thinning would increase the amount of light to the forest floor and would therefore be expected to result in an increase the quantity, quality and distribution of understory vegetation, including bitterbrush. This would result in a potential increase in the quantity and distribution of available browse for wintering deer. This would be a short-term increase; increasing canopy closure would reduce understory vigor and distribution and ultimately restore understory vegetation to pre-thinning levels. There would be some loss of existing understory vegetation due to skid trails, landings, and temporary roads. These losses would be negligible given the general paucity of understory vegetation. There would be little or no measurable effect on existing browse species.

Treatment of slash created by thinning operations by burning of piles would be expected to result in localized losses of individual or small groups of plants. Use of broadcast burning would result in greater numbers of plants. Losses would be tempered by the fact that the dense character of the pretreatment stands limits both the number and distribution of vegetation. As a result, the effects of available browse from slash treatments would be limited to very small areas and very few individuals. There would be little or no measurable effect on existing browse species.

Mechanical mowing of shrub vegetation would have a limited, short term effect on

the quantity and quality of browse. Late season mowing would effectively remove palatable browse as the plant would not have the time or resources to regrow new shoots. Early season mowing would result in an increase in the number of new shoots and decrease the number and distribution of older, less palatable shoots. This would increase the availability of browse. However, mowing also decreases the height of the plant thereby increasing the risk of it being buried by winter snows when the deer need it most. Limiting the area mowed would provide a mosaic of shrub heights and reduce the amount of browse potentially unavailable to deer because of snow depth.

Prescribed fire, particularly broadcast burning, has the potential to greatly reduce available browse by reducing the quantity, quality and distribution of bitterbrush. There is a greater likelihood of shrub mortality. The likelihood of maintaining a early/mid/late seral shrub mix of 1/3, 1/3, 1/3 is much lower.

Burning beneath the dripline of trees reduces fuel loadings by targeting areas of high fuel concentrations (primarily needle fall) but relatively few shrubs. There is a limited risk of fire escaping into the surrounding shrub community. The loss of bitterbrush would be limited to those individuals beneath tree driplines and potentially along the edge of the dripline. The potential of attaining or retaining the 1/3, 1/3, 1/3 early/mid/late seral shrub mix would be greater than using broadcast burning.

Mowing coupled with burning beneath the dripline would potentially allow for fewer acres to be mowed. This would also reduce the amount of new browse material that would be unavailable to deer because it is buried beneath the snow.

Fuels treatments proposed under each of the above projects would shift the seral condition of the shrub component to an early stage of development that would limit short-term browse availability within treated areas. If livestock utilization standards are not met, there could be a major reduction in available winter browse for mule deer. Table 8 displays, by WRHU, the area affected by fuels treatments proposed by these three projects.

Table 8 Proposed Fuel Treatment Acres by WHRU in the Fuzzy, Kelsey, and Opine Project Areas

WRHU	Total Acres*	Fuel Treatment Acres*	Percent Of WHRU
Green Mtn.	**17,165**	**6,315**	**36**
Coyote Butte	**9,475**	**1,602**	**17**
Arnold	**17,640**	**4,945**	**28**
Teepee Draw	**11,670**	**5,955**	**51**
Potholes	**10,090**	**5,815**	**58**
Pine Mtn.	13,445	5,340	40

***Acre figures are approximate.**

Approximately 3,500 acres of the Evans West fire area was reforested after the fire. To protect the planted trees, approximately 1,800 acres was fenced to exclude livestock and big game. Pasture 1 of the Cinder Hill Allotment, in which the fire was located, was also closed to grazing until 2006. When the fire area and pasture is reopened to both livestock grazing and big game, approximately 1,800 acres of deer winter range would be again available.

The Skeleton fire burned approximately 7,078 acres in Pasture 1 of the Coyote Allotment. The allotment has been vacant since 1991 when the permittee vacated his permit. After the fire in 1996, grazing was prohibited until 2006 to permit the area to recover. Grasses have successfully regenerated and dominated most sites within the fire boundaries. As a result, shrub regeneration has been slow and limited. Although the allotment would remain under this alternative, grazing would not be permitted without additional analysis should someone indicate an interest in the future. Moderate levels of grazing in other allotments has resulted in the promotion of shrubs species. There would be no change in the rate of shrub recruitment or expansion under this alternative.

OHV access in the Kelsey project area and the Opine project area outside of the East Fort Rock OHV trail system would be prohibited except on designated roads and trails. The Kelsey Access Management EA proposes to designate the area closed unless posted open and create a managed OHV trail system in the western portion of the current Coyote Allotment. It would also close approximately 51 miles of system roads.

The Opine Vegetation Management EA also proposes to designate all of the Pine Mountain Allotment east of Road 23 as closed unless posted open. The Opine Access Management EA proposes to establish a managed OHV trail system in the same area. It would also close approximately 25 miles of system roads, most of which are within designated deer winter range.

Closing the Kelsey and Opine project areas to unrestricted OHV use would immediately eliminate OHV use from deer winter range that are current open to unrestricted use. This would reduce stress and disturbance to deer during periods of inclement weather. It would also decrease fragmentation of habitat and provide more area of cover and browse without additional human influence and impacts.

Establishing designated OHV routes, including roads and trails, would be expected to continue or increase stress and disturbance levels in areas immediately adjacent to designated routes. Habitat would continue to be fragmented where routes are designated. Use of those areas would also be reduced.

The combination of closing areas to unrestricted OHV use and establishing managed OHV routes would result in a net increase of usable habitat over current conditions.

ALTERNATIVE 2 – PROPOSED ACTION AND ALTERNATIVE 4 – MODIFIED PROPOSED ACTION (CINDER CONE AND PINE MOUNTAIN ALLOTMENTS ONLY)

DIRECT AND INDIRECT EFFECTS

The risk of livestock foraging on bitterbrush would remain similar to or slightly reduced to that expected under Alternative 1. Grazing would be restored to the Coyote Allotment but cattle and horses would be limited to two (2) pastures. Grazing would be irregular in occurrence and only when events such as wildfire restrict or eliminate grazing from other allotments. The targeted grazing proposed for sheep and goats in all pastures of the reconfigured Coyote Allotment (Bessie Allotment) would be expected to result in little or no browsing of bitterbrush and therefore have no effect on available browse for deer.

The risk of livestock browsing bitterbrush in the Cinder Hill Allotment would also be expected to remain the same or be reduced. Although the allotment would return to full stocking of 600 head, the number of pastures would be increased from five (5) to seven (7) thereby increasing the number of acres available per cow. At least one and possibly two pastures would be rested each year. The grazing season would be changed by starting approximately two (2) weeks earlier in the spring (May 1 versus May 15) and ending approximately one (1) week earlier (Sept. 22 versus Sept. 30). This would minimize the risk of livestock browsing bitterbrush.

The Pine Mountain Allotment would decrease in size by approximately 211 acres thereby decreasing the number of acres per cow slightly. This would be expected to have no measurable effect on livestock utilization of bitterbrush. The grazing season would be shortened by approximately 25 days (October 25 to Sept. 30). This would be expected to reduce the risk of livestock browsing bitterbrush and would be expected to maintain or increase the amount of browse available for utilization by deer.

Monitoring of utilization would be expected to further reduce the risk of livestock browsing bitterbrush. Livestock would be removed from any pasture in any allotment when utilization reaches 50 percent of the

stubble height on Idaho fescue. This is estimated to be three (3) inches.

There would be no measurable effect on deer by the construction or reconstruction of fences. Fences limit deer movement and can result in fatalities when deer are caught in the fence. Approximately 14 miles of new fences would be constructed and approximately 24 miles of existing fence reconstructed. Fences would be a maximum of 42 inches in height and be three (3) strand barbed or smooth wire. Fences constructed to those specifications allow of for deer movement and minimize the risk of deer becoming entangled in the fence.

ALTERNATIVE 3 – NO GRAZING AND ALTERNATIVE 4 – MODIFIED PROPOSED ACTION (WESTERN PORTION, COYOTE ALLOTMENT ONLY)

DIRECT AND INDIRECT EFFECTS

This alternative would eliminate the risk of livestock browsing bitterbrush and reducing the quantity of browse available for mule deer. No grazing would occur in any of the allotments and the allotments closed.

Movement of deer would improve as fences were removed. Depending on budgets, personnel and other factors, this could take 10 years or more. Risks of deer becoming entangled in fences and subsequently dying would decline at a corresponding rate. When all fences were removed, the risk of entanglement and the associated fatalities would be eliminated.

ALTERNATIVE 4 – GRADUAL GRAZING REDUCTION

DIRECT AND INDIRECT EFFECTS

The risk of livestock foraging on bitterbrush would be the same as Alternative 2 for the Cinder Hill and Pine Mountain Allotments. The allotment would return to full stocking of 600 head, the number of pastures would be increased from five (5) to seven (7) thereby increasing the number of acres available per cow. At least one and possibly two pastures would be rested each year. The grazing season would be changed by starting approximately two (2) weeks earlier in the spring (May 1 versus May 15) and ending approximately one (1) week early (Sept. 22 versus Sept. 30). This would minimize the risk of livestock browsing bitterbrush.

The Pine Mountain Allotment would decrease in size by approximately 211 acres thereby decreasing the number of acres per cow slightly. This would be expected to have no measurable effect on livestock utilization of bitterbrush. The grazing season would be shortened by approximately 25 days (October 25 to Sept. 30). This would be expected to reduce the risk of livestock browsing bitterbrush and would be expected to maintain or increase the amount of browse available for utilization by deer.

Monitoring of utilization would be expected to further reduce the risk of livestock browsing bitterbrush. Livestock would be removed from any pasture in any allotment when utilization reaches 50 percent of the stubble height on Idaho fescue. This is estimated to be three (3) inches.

There would be no measurable effect on deer by the construction or reconstruction of fences. Fences limit deer movement and can result in fatalities when deer are caught in the fence. Approximately 14 miles of new fences would be constructed and approximately 24 miles of existing fence reconstructed. Fences would be a maximum of 42 inches in height and be three (3) strand barbed or smooth wire. Fences constructed to those specifications allow of for deer movement and minimize the risk of deer becoming entangled in the fence.

Active allotments would be closed if and when the permittee decided to vacate the permit. It is not expected that this would occur within the life the permit, 10 years. Therefore, the risk of livestock browsing bitterbrush and the potential for deer fatalities associated with fences would not

be eliminated until an unknown date in the future.

The risk of livestock foraging on bitterbrush would be the same as Alternative 3 for the remainder of the Coyote Allotment (western portion). This alternative would eliminate the risk of livestock browsing bitterbrush and reducing the quantity of browse available for mule deer in the western portion of the allotment.

Movement of deer would improve as fences were removed. Depending on budgets, personnel and other factors, this could take 10 years or more. Risks of deer becoming entangled in fences and subsequently dying would decline at a corresponding rate. When all fences were removed, the risk of entanglement and the associated fatalities would be eliminated.

CUMULATIVE EFFECTS – ALL ALTERNATIVES

Monitoring of long-term study plots (Current Trend Analysis Plots) indicates that shrub production has increased throughout the project area since the late 1950's. Herbicide treatments in the 1950's and 1960's were applied to the area to promote grasses. Halting herbicide applications coupled with continued fire suppression resulted in an increase in shrub densities across the project area. As a result of halting the herbicide use and fire suppression, shrubs have continued to increase within the project area. (Figures 16-19 pages 3-38 and 3-39)

Vigorous shrub communities are generally only lacking in wildfire areas, particularly within the boundaries of the Skeleton fire (1996).

Winter range habitats within the Cinder Hill project area would be affected by vegetation and fuels reduction treatments associated with other planning projects. Three (3) such projects overlap the Cinder Hill area; Fuzzy, Kelsey, and Opine.

The Fuzzy project area encompasses the east half of the Coyote Allotment and the western end of the Cinder Hill Allotment. The Fuzzy Environmental Assessment (2000) proposed 9,250 acres of commercial and non-commercial tree thinning and 15,000 acres of fuels reduction projects using mowing, prescribed burning or a combination of the two.

The Kelsey project area encompasses the western portion of the Coyote Allotment, essentially all of the proposed Bessie Allotment. The Kelsey Vegetation Management EA proposes approximately 4,200 acres of vegetation and fuels reduction treatments.

The Opine project area encompasses the remainder of the Cinder Hill Allotment and all of the Pine Mountain Allotment. It proposes approximately 20,200 acres of vegetation treatments including tree thinning and fuels reduction treatments.

Tree thinning would increase the amount of light to the forest floor and would therefore be expected to result in an increase the quantity, quality and distribution of understory vegetation, including bitterbrush. This would result in a potential increase in the quantity and distribution of available browse for wintering deer. This would be a short-term increase; increasing canopy closure would reduce understory vigor and distribution and ultimately restore understory vegetation to pre-thinning levels. There would be some loss of existing understory vegetation due to skid trails, landings, and temporary roads. These losses would be negligible given the general paucity of understory vegetation. There would be little or no measurable effect on existing browse species.

Treatment of slash created by thinning operations by burning of piles would be expected to result in localized losses of individual or small groups of plants. Use of broadcast burning would result in greater numbers of plants. Losses would be tempered by the fact that the dense character of the pretreatment stands limits both the number and distribution of vegetation. As a result, the effects of available browse from slash treatments would be limited to very small areas and

very few individuals. There would be little or no measurable effect on existing browse species.

Mechanical mowing of shrub vegetation would have a limited, short term effect on the quantity and quality of browse. Late season mowing would effectively remove palatable browse as the plant would not have the time or resources to regrow new shoots. Early season mowing would result in an increase in the number of new shoots and decrease the number and distribution of older, less palatable shoots. This would increase the availability of browse. However, mowing also decreases the height of the plant thereby increasing the risk of it being buried by winter snows when the deer need it most. Limiting the area mowed would provide a mosaic of shrub heights and reduce the amount of browse potentially unavailable to deer because of snow depth.

Prescribed fire, particularly broadcast burning, has the potential to greatly reduce available browse by reducing the quantity, quality and distribution of bitterbrush. There is a greater likelihood of shrub mortality. The likelihood of maintaining a early/mid/late seral shrub mix of 1/3, 1/3, 1/3 is much lower.

Burning beneath the dripline of trees reduces fuel loadings by targeting areas of high fuel concentrations (primarily needle fall) but relatively few shrubs. There is a limited risk of fire escaping into the surrounding shrub community. The loss of bitterbrush would be limited to those individuals beneath tree driplines and potentially along the edge of the dripline. The potential of attaining or retaining the 1/3, 1/3, 1/3 early/mid/late seral shrub mix would be greater than using broadcast burning.

Mowing coupled with burning beneath the dripline would potentially allow for fewer acres to be mowed. This would also reduce the amount of new browse material that would be unavailable to deer because it is buried beneath the snow.

Fuels treatments proposed under each of the above projects would shift the seral condition of the shrub component to an early stage of development that would limit short-term browse availability within treated areas. If livestock utilization standards are not met, there could be a major reduction in Three of the WRHU units; Teepee Draw, Potholes and Pine Mountain, would exceed the 1/3, 1/3, 1/3 early/mid/seral mix desired by ODFW. All are located within the Opine project area. The Green Mountain WRHU would be slightly above, 36 percent, in early seral habitat. Both Coyote Butte and Arnold would remain below at approximately 17 and 28 percent respectively in early seral habitat after treatment. Both are located in the Coyote Allotment.

Table 9 displays, by WRHU, the area affected by fuels treatments proposed by these three projects.

Table 9 Proposed Fuel Treatment Acres by WHRU in the Fuzzy, Kelsey, and Opine Project Areas

WRHU	Total Acres*	Fuel Treatment Acres*	Percent Of WHRU
Green Mtn.	**17,165**	**6,315**	**36**
Coyote Butte	**9,475**	**1,602**	**17**
Arnold	**17,640**	**4,945**	**28**
Teepee Draw	**11,670**	**5,955**	**51**
Potholes	**10,090**	**5,815**	**58**
Pine Mtn.	13,445	5,340	40

***Acre figures are approximate.**

Approximately 3,500 acres of the Evans West fire area was reforested after the fire. To protect the planted trees, approximately 1,800 acres were fenced to exclude livestock and big game. Pasture 1 of the Cinder Hill Allotment, in which the fire was located, was also closed to grazing until 2006. When the fire area and pasture is reopened to both livestock grazing and big game, approximately 1,800 acres of deer winter range would be again available.

The Skeleton fire burned approximately 7,078 acres in Pasture 1 of the Coyote Allotment. The allotment has been vacant

since 1991 when the permittee vacated his permit. After the fire in 1996, grazing was prohibited until 2006 to permit the area to recover. Grasses have successfully regenerated and dominated most sites within the fire boundaries. As a result, shrub regeneration has been slow and limited. Although the allotment would remain under this alternative, grazing would not be permitted without additional analysis should someone indicate an interest in the future. Moderate levels of grazing in other allotments has resulted in the promotion of shrubs species. There would be no change in the rate of shrub recruitment or expansion under this alternative.

OHV access in the Kelsey project area and the Opine project area outside of the East Fort Rock OHV trail system would be prohibited except on designated roads and trails. The Kelsey Access Management EA proposes to designate the area closed unless posted open and create a managed OHV trail system in the western portion of the current Coyote Allotment.

The Opine Vegetation Management EA also proposes to designate all of the Pine Mountain Allotment east of Road 23 as closed unless posted open. The Opine Access Management EA proposes to establish a managed OHV trail system in the same area. It would also close approximately 25 miles of system roads most of which are within designated deer winter range.

Closing the Kelsey and Opine project areas to unrestricted OHV use would immediately eliminate OHV use from deer winter range currently open to unrestricted OHV use. This would reduce stress and disturbance to deer during periods of inclement weather. It would also decrease fragmentation of habitat and provide more area of cover and browse without additional human influence and impacts.

Establishing designated OHV routes, including roads and trails, would be expected to continue or increase stress and disturbance levels in areas immediately adjacent to designated routes. Habitat would continue to be fragmented where routes are designated. Use of those areas would also be reduced.

The combination of closing areas to unrestricted OHV use and establishing managed OHV routes would result in a net increase of usable habitat over current conditions.

Elk

No Key Elk Habitat is designated by the LRMP within the Cinder Hill Project Area. ODFW has identified an elevational band along the southwest boundary of the project area where elk herds frequent. This area includes the southern portion of the Coyote Allotment and pasture 3 of the Cinder Hill Allotment. Both areas are currently not grazed; the former because the allotment is currently vacant, the latter due to the lack of a fence along the pasture and allotment boundary.

Elk populations are increasing yearly from historical levels within the project area. Utilization by elk within the project area is limited to specific elevation bands.

ALTERNATIVE 1 – CURRENT MANAGEMENT

DIRECT AND INDIRECT EFFECTS

This alternative would have no effect on elk. Areas frequented by elk are currently not grazed and would not be grazed under this alternative. All forage would be available for elk without competition by livestock.

There would be no measurable effect on elk movements. No new fences would be constructed in either the Coyote or Cinder Hill Allotment. Damage to existing fences within elk use zones would continue.

ALTERNATIVE 2 – PROPOSED ACTION ALTERNATIVE 4 – MODIFIED PROPOSED ACTION

DIRECT AND INDIRECT EFFECTS

Effects on elk would be limited under this alternative.

Elk use is largely limited to higher elevations along the southwest boundary of the project area. It includes primarily the very southern portions of the Coyote Allotment and western portions of pasture 3 of the Cinder Hill Allotment.

There would be no competition for forage between elk and cattle in the new South pasture of the new Bessie Allotment. No cattle or horses would be grazed in that pasture.

There would be no measurable effect of grazing sheep and goats on elk. The duration of grazing would be limited and grazing would be targeted on specific species and/or objectives.

Use of a rest rotation grazing system would allow the Orphan pasture in the new Cinder Cone Allotment to be rested for at least two (2) years of every seven (7). During years of active grazing, the timing of grazing would be varied. This would reduce the competition for available forage between livestock and elk.

Construction of new fences, particularly along the southwest boundary of the Cinder Hill Allotment, and reconstruction of missing or damaged fences, would impede the movement of elk and result in a small increase in the potential for animals becoming entangled in the fence. There would be a greater increase in the potential for elk damaging fences and allowing livestock to escape into unauthorized or unwanted areas.

Removal of existing, unneeded fences would improve movement and reduce the risk of elk becoming entangled and getting injured or dying.

Impacts on forage availability for elk would be limited by meeting forage utilization standards and continued use of a rest rotation grazing system. The increase in the number of pastures from five (5) in the Cinder Hill Allotment to seven (7) in the new Cinder Cone Allotment would allow at least two pastures to be rested each year. This would further limit competition for available forage between cattle and elk.

ALTERNATIVE 3 – NO GRAZING AND ALTERNATIVE 4 – MODIFIED PROPOSED ACTION (WESTERN PORTION COYOTE ALLOTMENT

DIRECT AND INDIRECT EFFECTS

This alternative would have no effect on elk. Areas frequented by elk would not be grazed under this alternative. All forage would be available for elk without competition by livestock.

Initially, there would be effect on elk movement. Over time, perhaps 10-15 years, there would a small but gradual improvement in the ability of elk to move without impediment. All existing fences would be removed within this time period; no new fences would be constructed. Damage to existing fences would decline during this same period and would be eliminated when all fences were removed.

CUMULATIVE EFFECTS – ALL ALTERNATIVES

In the short-term, fuels treatments proposed in the Kelsey, Opine, and Fuzzy project areas could potential reduce forage opportunities for elk due to the loss of forage materials by fire and mowing. The reduction would be minimal due to annual regeneration of grasses and forbs. In the long-term these fuel treatments would create an influx of grasses and forbs creating potential foraging areas for elk.

Raptors

There are five (5) raptor management indicator species of interest in the project area; northern goshawk, Cooper's Hawk, sharp-shinned hawk, red-tailed hawk, and golden eagle.

Northern Goshawk: Nesting goshawks select mature or old growth conifer stands having a multi-layered canopy with vegetation extending from a few feet above ground to 120 feet (40 meters) or more in height. Nest sites are generally near a source of water, are on moderate slopes,

and usually have a northerly aspect. Foraging generally occurs within these stands where small openings are present. Prey species are usually passerine birds but will target small mammals such as rodents and snowshoe hares. Blue, ruffed, and spruce grouse as well as willow ptarmigan may also be targeted where and when present.

Surveys conducted within the Kelsey, Fuzzy and Opine project areas identified two goshawk territories. One is located in the Coyote Allotment; the second in the Pine Mountain Allotment (Wildlife Report, page 34)

Cooper's Hawk: The Cooper's hawk prefers 50 to 80 year old conifer stands with a closed canopy for nesting. The habitat is similar to that of the northern goshawk but is younger, shorter in height, and does not have a well-developed coniferous understory. Its habitat consists of dense forests intermixed with openings. Where the species occurs in extensive forests, it is more likely to be found near forest edges, along roads or clearings, or at a forest opening such as stream or lake edges.

One nest site has been identified within the Coyote Allotment.

Sharp-shinned Hawk: Sharp-shinned hawk prefers nest groves of even aged stands of 40 to 60 year old conifers with a dense canopy. Nesting can occur in dense stands of second growth trees beneath an over-mature overstory.

There are no known nest sites within the project area. Suitable habitat is present in forested locations within the project area.

Red-tailed Hawk: This species has an extremely wide tolerance for habitat variation. It generally prefers open woodland areas associated with forest edges for nesting. The high amount of fragmentation within the project area provides an abundance of foraging habitat. The lack of large trees in the area limits nesting sites.

Three (3) nest sites have been identified within the project area: one in the Coyote Allotment and two in the Cinder Hill Allotment.

Golden Eagle: Golden eagles favor grass-shrub, shrub-sapling, and young woodland stages of forested areas, or forests with open lands nearby for hunting. It requires only a favorable nest site, usually a large tree or cliff; a dependable food supply, primarily medium to large mammals and birds; and broad expanses of open country for foraging. It favors hilly or mountain country where take off and soaring are facilitated by updrafts. Deeply cut canyons rising to open sparsely treed mountain slopes and crags represent ideal habitat (Wildlife Report, page 35).

Pine Mountain, as well as other steep topographic features within the project area, provide ideal habitat. The project area provides a variety of open as well as timbered habitat that contains a rodent prey base. These areas provide an opportunity for both nesting and foraging habitat.

Pine Mountain has historically been used as a nesting and foraging area. It also contains many historic but inactive nest sites. There are currently two (2) active nest sites on Pine Mountain. Monitoring determined that one was active in 2001 but was unoccupied in 2002. The other was occupied in 2002 (Wildlife Report, page 35).

ALTERNATIVE 1 – CURRENT MANAGEMENT

DIRECT AND INDIRECT EFFECTS

This alternative provides the highest overall density of cattle grazing within the Cinder Hill Project area. This would be the most impactive to raptors by livestock reducing vegetation that provides hiding, nesting, and foraging for raptor prey species.

Grazing by livestock reduces the quantity, quality and distribution of vegetation that provides hiding, nesting, and foraging habitat for species that are prey for raptors. The prey base would not be affected by this alternative in the Coyote Allotment; the

allotment would remain vacant and ungrazed. The prey base would not be affected in pasture 3 of the Cinder Hill Allotment; the pasture is currently ungrazed and would continue to be ungrazed until such time as a boundary fence was permitted to be constructed. The prey base would also not be affected in pasture 1 of the same allotment until 2006. Grazing is not permitted in that pasture until at least 2006 to protect trees planted after the Evans West fire in 1996.

ALTERNATIVE 2 – PROPOSED ACTION AND ALTERNATIVE 4 – MODIFIED PROPOSED ACTION

DIRECT AND INDIRECT EFFECTS

Grazing by livestock reduces the quantity, quality and distribution of vegetation that provides hiding, nesting, and foraging There would be a limited increase in prey base habitat losses in the new Bessie Allotment when livestock were grazed under Alternative 2. The increase would be limited and immeasurable because of the irregular and limited location (two pastures) of cattle grazing and the focused use of sheep and goats targeting fuels reduction treatments.

Under Alternative 4, there would be no prey base habitat losses in the western portion of the Coyote Allotment. This portion would not be grazed.

There would be no impact to prey base habitats in pasture 1 of the Coyote Allotment or pasture 1 of the Cinder Hill Allotment until at least 2006. Grazing in both pastures was prohibited after the Evans West and Skeleton fires respectively. Renewal of grazing in 2006 or later would result in some loss of prey base habitats. The loss would be expected to be limited and immeasurable. The new Cinder Cone Allotment would have seven (7) pastures including both closed pastures, and would allow at least two (2) pastures to be rested each year.

There would be no impact on prey base habitats in pasture 3 of the Cinder Hill Allotment until the pasture and allotment boundary fence was constructed along the southwest boundary of the pasture and allotment. This would be expected to occur within the first several years of the new permit. After construction, some loss of prey base habitat would be expected. Use of a rest rotation grazing system coupled with an increase to seven (7) pastures within the allotment, would permit at least two pastures to be rested each year.

Rest rotation grazing also varies the timing of grazing within each pasture each year. This would also limit the loss of prey base habitat by varying the types and locations of habitat affected each year.

ALTERNATIVE 3 – NO GRAZING AND ALTERNATIVE 4 – GRADUAL GRAZING REDUCTION (WESTERN PORTION COYOTE ALLOTMENT ONLY)

DIRECT AND INDIRECT EFFECTS

There would be no loss of prey base habitats to grazing. Grazing in all allotments would be eliminated.

CUMULATIVE EFFECTS

There are fuels treatment units (prescribed burning and mowing) within the project area that are associated with the Kelsey, Fuzzy, and Opine planning areas (See Map 11). These treatments within the project area would remove hiding, nesting, and foraging habitat by removing grasses and shrubs. This would cumulatively reduce the amount of available habitat for raptor prey species, potentially reducing areas utilized by raptors for foraging as well as minimizing the availability of prey within nesting area. Because grazing would be eliminated from all three allotments, these impacts would be expected to be short duration, generally less than 5-10 years, after which treated vegetation would be expected to return to pre-treatment conditions. The exception would in broadcast burn areas. Recovery of shrub communities could take several decades or more before returning to pretreatment conditions.

ALTERNATIVE 4 – GRADUAL GRAZING REDUCTION

DIRECT AND INDIRECT EFFECTS

This alternative would be similar to but have less impact than Alternative 2. There would be no loss of prey base habitats to grazing in the western portion of the Coyote Allotment. Grazing would be prohibited and that portion of the allotment closed.

Grazing by livestock reduces the quantity, quality and distribution of vegetation that provides hiding, nesting, and foraging There would be a limited increase in prey base habitat losses in the new Bessie Allotment when livestock were grazed. The increase would be limited and immeasurable because of the irregular and limited location (two pastures) of cattle grazing and the focused use of sheep and goats targeting fuels reduction treatments.

There would be no impact to prey base habitats in pasture 1 of the Coyote Allotment or pasture 1 of the Cinder Hill Allotment until at least 2006. Grazing in both pastures was prohibited after the Evans West and Skeleton fires respectively. Renewal of grazing in 2006 or later would result in some loss of prey base habitats. The loss would be expected to be limited and immeasurable. The new Cinder Cone Allotment would have seven (7) pastures including both closed pastures, and would allow at least two (2) pastures to be rested each year.

There would be no impact on prey base habitats in pasture 3 of the Cinder Hill Allotment until the pasture and allotment boundary fence was constructed along the southwest boundary of the pasture and allotment. This would be expected to occur within the first several years of the new permit. After construction, some loss of prey base habitat would be expected. Use of a rest rotation grazing system coupled with an increase to seven (7) pastures within the allotment, would permit at least two pastures to be rested each year.

Rest rotation grazing also varies the timing of grazing within each pasture each year. This would also limit the loss of prey base habitat by varying the types and locations of habitat affected each year.

Grazing in the Cinder Cone and Pine Mountain Allotments would not be expected to be terminated during the life of the new permit, 10 years. Impacts to prey base habitats would continue until the permits were vacated and the allotments terminated.

CUMULATIVE EFFECTS – ALTERNATIVE 1, 2, AND 4

There are fuels treatment units (prescribed burning and mowing) within the project area that are associated with the Kelsey, Fuzzy, and Opine planning areas (See Map 11). These treatments within the project area would remove hiding, nesting, and foraging habitat by removing grasses and shrubs. This would cumulatively reduce the amount of available habitat for raptor prey species, potentially reducing areas utilized by raptors for foraging as well as minimizing the availability of prey within nesting area.

Primary Cavity Excavators

Habitat is present for species that are dependent on cavities for nesting including woodpeckers, nuthatches, and owls. No surveys have been completed to date for cavity dependent species. There are no known nest sites within the project area.

The following species of primary cavity nesters are known to inhabit or potentially inhabit the project area:

- white-headed woodpecker,
- black-backed woodpecker,
- Northern flicker,
- Lewis' woodpecker, and
- Pygmy nuthatch.

These species require snags within their home range to sustain population.

ALL ALTERNATIVES

DIRECT AND INDIRECT EFFECTS

The livestock grazing actions associated with these alternatives would not affect snags or down logs within the project area. No snags, trees, or downed logs would be cut or removed under this alternative.

There would be no direct or indirect effects to cavity excavators as a result of the project.

CUMULATIVE EFFECTS

Vegetation and fuels treatments associated with the Fuzzy and proposed Kelsey and Opine vegetation management projects have the potential to remove existing snags, trees and downed logs that currently provide habitat for cavity nesting birds. Retention requirements, policies and practices would be expected to minimize the loss or degradation of such habitat in the short term (up to several decades). Such policies would also be expected to result in the development of future habitat in the longer term (50 years and longer). There would be no cumulative effects on such habitat under this alternative because no existing habitat would be affected by actions proposed by this alternative.

Species of Concern

Bats

Small-footed myotis

Roosting, nursing, and hibernating habitat occurs on the Deschutes National Forest (NF). Hibernacula and maternity consists mainly of lava tubes and small caves. Roosting habitat consists of rock crevices, caves, cliff faces and buildings.

Long-eared myotis

This species is documented on the Deschutes NF. They roost in caves, under tree bark, in snags, and under bridges. Despite it's occurrence in a wide variety of habitats, it has been closely associated with old-growth forests or components of old growth. Maternity habitat consists of fallen logs, snags, and buildings. Hibernating individuals have been found in caves, crevices, and building in western Oregon and Washington, but wintering ecology and distribution are largely unknown (Wildlife report, page 37).

Long-legged myotis

This species of bat has been documented as occurring on the Deschutes NF. IT is most closely associated with forested habitat, most notably old growth stands. Day and night roost habitat mainly consists of large diameter snags and rock crevices. Foraging occurs in mature open stands and early seral stage stands. Trees and large snags provide the most important habitat for nursery colonies. These bats have been documented to hibernate in caves on the Deschutes NF (Wildlife report, page 37).

Yuma myotis

This species is documented on the Deschutes NF. It is normally highly associated with water and riparian habitat. Night roost habitat includes bridges, building, trees and rim rock. Nursery colonies have been found in buildings, under bridges, in caves and mines. This species is not known to hibernate on the Forest (Wildlife report, page 37).

Western big-eared bat

This species is documented on the Deschutes NF. It depends on caves for hibernation, for raising their young, and for day and night roosting. It forages in a broad range of forested conditions from open savanna to fully stocked conifer stands. Prey species are strongly associated with bitterbrush, ceanothus, and other shrub species. Most foraging is suspected to occur within five miles of day roosts. Past studies have shown that foraging along forest edges occurred most often, apparently related to availability of prey species (moths) and protective habitat for predation. It depends on open water to meet moisture requirements (Wildlife report, page 37).

Large winter hibernating populations of these bats occur in a few caves on the Bend-Ft. Rock Ranger District. The population is estimated to be 600 individuals in central Oregon (including the Deschutes National Forest and immediately adjacent areas). There are 2,500 individuals estimated to occur in Oregon. Population trends for central Oregon, based on winter counts in hibernacula, have indicated a decline of about 25percent since 1986. The decline is probably related to disturbance of hibernating bats, disturbance to the maternity roosts, and effects of recent wildfires (Wildlife report, page 38).

The project area contains many extensive cave systems that have known occurrences of use by several of these species. Utilization of the caves varies between species from hibernacula in the winter months to day roost sites during the warm seasons. The project area also contains forested lava that provide both foraging areas within Late and Old Structure stands (LOS) as well as roosting habitat within the rock crevices of the lava (Wildlife report, page 38).

ALTERNATIVE 1 – CURRENT MANAGEMENT; ALTERNATIVE 2 – PROPOSED ACTION; ALTERNATIVE 4 – GRADUAL GRAZING REDUCTION

DIRECT AND INDIRECT EFFECTS

Utilization of shrubs and grasses by livestock could impact forage availability for bats. Many insects rely upon the grasses and shrubs within the project area. If intense utilization of grasses and shrubs occurs within the project area, forage for bats could decline.

CUMULATIVE EFFECTS

With the fuel treatments (e.g. mowing and burning) associated with the Kelsey, Fuzzy, and Opine project areas, the potential exists to reduce bat forage availability on a landscape level.

ALTERNATIVE 3 – NO GRAZING

DIRECT AND INDIRECT EFFECTS

There would be no reduction in habitat for insect species because livestock would be removed from all allotments. Grazing of shrubs and grasses would be limited to wild animals such as deer and elk. This could result in an immeasurable increase in the prey base for bats.

CUMULATIVE EFFECTS

With the fuel treatments (e.g. mowing and burning) associated with the Kelsey, Fuzzy, and Opine project areas, the potential exists to reduce bat forage availability on a landscape level. Impacts would be less because livestock would also not be grazing grasses and forbs that provide habitat for insects preyed upon by bats.

Reptiles

Northern Sagebrush Lizard

The sagebrush lizard is the most common lizard of the sagebrush plains. It also occurs in open forests of juniper, ponderosa pine, and lodgepole pine that have open brushy understories. It is seldom found above approximately 5,600 feet (1,700 m) in Oregon. The species is a ground dweller and seldom climbs except to escape. They have been observed resting on the larger branches of sagebrush but never more than a few centimeters above ground level.

Sagebrush lizards eat beetles, flies, butterflies, caterpillars, ants, wasps, spiders, ticks, mites, aphids, scorpions, and a wide variety of other arthropods.

When disturbed, they utilize shrub cover, rodent burrows, rock crevices, or surface litter for security. Striped whipsnakes and night snakes are known to prey on them. They also may fall prey to predatory birds and other lizards.

There are identified occurrences of the sagebrush lizard within Deschutes County. There are no documented occurrences for the Bend-Ft. Rock Ranger District. The project area contains habitat similar to that described in literature. It is highly likely that the species occurs within the project area (Wild Report page 39)

ALTERNATIVE 1 – CURRENT MANAGEMENT

DIRECT AND INDIRECT EFFECTS

There would be no measurable effect on the northern sagebrush lizard under this alternative. All three allotments contain areas with open shrub communities that potentially provides habitat for the sagebrush lizard. The Coyote Allotment is currently vacant and would remain vacant. In the Cinder Hill and Pine Mountain Allotments, overgrazing could potentially reduce the amount of herbaceous material that provides habitat for the lizard. It could

also reduce the habitat for the prey species of the lizard (insects). Monitoring grazing within the three allotments has documented no overgrazing. Grazing practices as measured by stubble heights have met LRMP standards and would be expected to continue to do so.

This alternative has the least impact of the three action alternatives because the entire Coyote Allotment remains vacant.

ALTERNATIVE 2 – PROPOSED ACTION AND ALTERNATIVE 4 – GRADUAL GRAZING REDUCTION (CINDER CONE AND PINE MOUNTAIN ALLOTMENTS ONLY)

DIRECT AND INDIRECT EFFECTS

There would be no measurable effect on the northern sagebrush lizard under this alternative. All three allotments contain areas with open shrub communities that potentially provides habitat for the sagebrush lizard. Under Alternative 2, the new Bessie Allotment (the western portion of the Coyote Allotment) would be grazed irregularly. Because the Coyote Allotment is currently vacant, there would be a small immeasurable decrease in both the prey base and its habitat in the new allotment. This would be expected to be extremely limited and highly variable as the allotment would be grazed irregularly and for very short time periods.

Effects would be greater but still immeasurable in the eastern portion of the allotment which would be combined with the Cinder Hill Allotment as the new Cinder Cone Allotment. Impacts would be higher in this area compared to current conditions because grazing would be restored within the next 3-5 years as fences were reconstructed and grazing allowed in pasture 1 of the Coyote Allotment. The increased size of the new Cinder Cone Allotment (compared with the Cinder Hill Allotment) coupled with a no increase in livestock stocking, would limit the extent of impacts. The additional pastures, seven versus the current five, would also provide two or more years of no grazing within each pasture every five years. This would further reduce the impacts on the prey base and prey base habitats.

Overgrazing could potentially reduce the amount of herbaceous material that provides habitat for the lizard. It could also reduce the habitat for the prey species of the lizard (insects). Monitoring grazing within the three allotments has documented no overgrazing. Grazing practices as measured by stubble heights have met LRMP standards and would be expected to continue to do so.

The potential for impacts on the lizard and its habitat would be slightly greater under Alternative 2 than 4. Under Alternative 4, the western portion of the Coyote Allotment would not be grazed.

ALTERNATIVE 3 – NO GRAZING AND ALTERNATIVE 4 – GRADUAL GRAZING REDUCTION (WESTERN PORTION COYOTE ALLOTMENT ONLY)

DIRECT AND INDIRECT EFFECTS

There would be no measurable effect on the northern sagebrush lizard under this alternative. Grazing in all allotments would be ended and the allotments terminated. There would be no potential for a reduction in either prey base or prey base habitat due to livestock grazing.

This alternative has the least impacts of all the alternatives because grazing would be terminated on all allotments.

CUMULATIVE EFFECTS – ALL ALTERNATIVES

None of the alternatives would have no effect on northern sagebrush lizards or their habitat in the Coyote Allotment. Fuels treatments proposed under the Kelsey Vegetation Management EA would not affect lizards or their habitat. Neither lizards nor their habitat are present in the allotment.

Fuels treatments proposed under the Fuzzy EA and the Opine Vegetation EA would affect habitat and potentially the species in the Cinder Hill and Pine Mountain

allotments. Habitat is present in both allotments. Existing habitat would be removed by burning and changed by mowing.

Tree thinning proposed under the Fuzzy and Opine projects would potentially increase habitat in the longer term. Thinning would open closed stands providing additional light, nutrients, space, and water for understory vegetation.

Some temporary loss of existing or potential habitat would also be expected. Landings, skid trails, and temporary spur roads would result in damage or destruction of vegetation and habitat. Given the relative paucity of understory shrubs and habitat in forested areas, these impacts would be expected to be limited and immeasurable.

Land Birds

Neotropical migratory birds have become species of interest because of the downward population trends in the West. The declines are believed to be due to many complex factors but the primary ones are believed to be the loss, fragmentation, and alteration of historic vegetation communities. Other probable causes include predation from feral species, nest parasitism, and pesticide use associated with agriculture. The Forest Service (USFS) (January 2001) and the U.S Fish and Wildlife Service (USFWS) have a Memorandum of Understanding (MOU) (January 2001) that provides for enhanced cooperation between the two agencies (Executive Order 131186). Specific activities are identified where cooperation between the parties would substantially contribute to conservation and management of migratory birds, their habitat, and associated values. Director's Order No. 131 (USFWS) identifies the requirement necessary to obtain permits from the agency for activities involving the intentional take of birds. There is no mechanism to authorize or exempt the unintentional take of migratory birds by federal agencies. Federal agencies, including the USFS, are developing additional MOUs with the USFWS to further migratory bird conservation as called for by Executive Order 131186.

The Deschutes National Forest is currently following guidelines from the "**Conservation Strategy for Landbirds in the Columbia Plateau of Eastern Oregon and Washington**." It addresses key habitat types and the focal species associated with them. It discusses the biological objectives and conservation strategies for those types and associated focal species. The conservation strategy lists three priority habitats:

1) Shrub-Steppe Habitat;
2) Riparian Habitat; and
3) Unique Habitats.

Shrub-Steppe

The strategy emphases sagebrush brush habitats, particularly big sagebrush communities. Big sagebrush has several obligate or near-obligate species and probably has been impacted more than other types. Other forms of sagebrush, i.e. low sage, are of less value to birds and less threatened than big sagebrush. Landbird conservation in shrub-steppe habitats emphasizes maintaining healthy ecosystems through representative focal species for several habitat conditions in five habitat types (Wildlife Report page 42).

Table 10 displays the five (5) habitats, their features, and the focal species associated with them in the shrub-steppe habitat group.

Table 10 Shrub-Steppe Habitats and Focal Species, Deschutes National Forest

Habitat	Habitat Feature/ Conservation Focus	Focal Species by Subprovince
		High Lava Plains/Basin-Range/Owyhee
Steppe (Grassland)	native bunchgrass cover	grasshopper sparrow
Steppe-Shrubland	interspersion of tall shrubs	loggerhead shrike
	burrows	borrowing owl
	deciduous tees and shrubs	sharp-tailed grouse
Sagebrush	large areas of sagebrush with diverse understory of native grasses	sage grouse

	large unfragmented patches	sage sparrow
	sagebrush cover	Brewer's sparrow
	sagebrush height	sage thrasher
Shrublands	ecotonal edges of herb, shrub and tree habitats	lark sparrow
	upland, sparsely vegetated desert scrub	black-throated sparrow (BR and OW only)
Juniper-Steppe	scattered mature juniper trees (savanna)	ferruginous hawk

Three (3) of the five (5) shrub-steppe habitats are present in the Cinder Hill project area:

- Sagebrush;
- Shrublands; and
- Juniper-steppe.

A bird identification training on and around Pine Mountain in the Pine Mountain Allotment identified a number of different species of birds including several that are identified as focal species for shrub-steppe habitats, and particularly the sagebrush habitat. These included the sage sparrow, the sage thrasher, and Brewer's sparrow. Although not identified during the training, sage grouse is also present in the area.

Grazing of cattle is specifically addressed within shrub-steppe habitat portion of the conservation strategy. It includes all shrub-dominated habitats. The strategy identifies two effects of grazing in the shrub-steppe habitat:

1) Overgrazing could negatively affect habitat by altering species composition, reducing residual vegetation, inhibiting vegetation recruitment, and increasing encroachment of noxious weeds.
2) Grazing may not adversely impact vegetation if relatively light pressure is rotated between pastures and deferred on an annual and seasonal basis.

It makes the following recommendations regarding grazing in shrub-steppe habitats:

1) Implement grazing practices that are consistent with growth of native plants and forbs including increasing rest cycles in rest-rotation systems, and/or deferring grazing until bunchgrasses have begun to cure.
2) Manage livestock numbers or time on rangeland to maintain the ecological integrity of the plant community through fencing exclusions or time management.
3) Exclude livestock grazing from relatively pristine areas (Altman and Holmes, 2000 as cited in the Wildlife Report, page 44).

Riparian

There are no riparian habitats within the project area. There are no lakes, ponds, rivers, streams, or other perennial water bodies. There are no intermittent streams.

Unique

The conservation strategy identifies five unique habitats and the focal species associated with them. Table 11 displays the habitats, their features, and the focal species associated with each.

Table 11 Unique Habitats and Focal Species, Deschutes National Forest

Habitat	Habitat Feature/ Conservation Focus	Focal Species by Subprovince
		High Lava Plains/ Great Basin (GB) /Owyhee OW)
Aspen	large trees and snags with regeneration	red-naped sapsuckers
Agriculture Fields	bobolink	bobolink (GB and OW only)
Juniper Woodland	Mature juniper with regeneration	gray flycatcher
Cliffs and Rimrock	undeveloped foraging areas	prairie falcon
Mountain Mahogany	large diameter trees with regeneration	Virginia's warbler

The bird identification training on and around Pine Mountain also identified one species of bird, the gray flycatcher, that is identified as a focal species for unique habitats, in this case, juniper woodland.

Juniper woodland, cliff and rimrock, and mountain mahogany habitat are present in

the project area. Juniper woodlands and mountain mahogany habitats are present in the Pine Mountain Allotment. Cliff and rimrock habitat is present in all three allotments.

ALTERNATIVE 1 – CURRENT MANAGEMENT

DIRECT AND INDIRECT EFFECTS

No intentional take of migratory birds would occur under this alternative.

This alternative would have no effect on migratory birds in the Coyote Allotment. The allotment is currently vacant and would remain vacant. Livestock would not graze on any shrub or forb species. Habitats for birds would remain undisturbed by livestock.

A rest rotation grazing system would be continued in the Cinder Hill and Pine Mountain Allotments. At least one pasture would be rested each year; other pastures would be grazed on a rotating basis allowing plants to attain different stages of development each year. Utilization would be controlled. The risk of compromising nesting, foraging, and perching habitat would be very limited and immeasurable.

This alternative has the least number of acres per cow across the project area. If forage were to cure early due to the lack of moisture, livestock could potentially exceed utilization standards which could potentially compromise nesting, foraging, and perching habitat within the shrub community. Based on past monitoring of utilization standards, there is a low risk of this occurring. There are no records of utilization exceeding forest utilization standards within the project area. Monitoring livestock utilization during the grazing period would be expected to limit or eliminate the risk of exceeding utilization standards.

Concentrations of livestock would be expected to impact ground nesting birds by trampling nests. The greatest potential occurs near water sets. The risk is very low and immeasurable given the extremely limited area, approximately one (1) acre per water set, within each allotment (less than $1/10^{th}$ of one percent of each allotment).

ALTERNATIVE 2 – PROPOSED ACTION AND ALTERNATIVE 4 – GRADUAL GRAZING REDUCTION

DIRECT AND INDIRECT EFFECTS

No intentional take of migratory birds would occur under this alternative.

This alternative increases the number of acres per cow slightly across the project area. If forage were to cure early due to the lack of moisture, livestock could potentially exceed utilization standards which could potentially compromise nesting, foraging, and perching habitat within the shrub community. Based on past monitoring of utilization standards, there is a low risk of this occurring. The risk under this alternative is lower than under Alternative 1 because livestock would be better distributed. There are no records of utilization exceeding forest utilization standards within the project area. Monitoring livestock utilization during the grazing period would be expected to limit or eliminate the risk of exceeding utilization standards.

Concentrations of livestock would be expected to impact ground nesting birds by trampling nests. The greatest potential occurs near water sets. The risk is very low and immeasurable given the extremely limited area, approximately one (1) acre per water set, within each allotment (less than $1/10^{th}$ of one percent of each allotment). Adding seven additional water sets and closing eight existing water sets would not measurably change the effects.

The effects would be slightly greater in Alternative 2 than Alternative 4. The western portion of the Coyote Allotment would be closed to grazing under Alternative 4. This would eliminate any possibility of livestock reducing the amount or quality of habitat or trampling of nests.

ALTERNATIVE 3 – NO GRAZING

DIRECT AND INDIRECT EFFECTS

No intentional take of migratory birds would occur under this alternative. No grazing would occur. All allotments would be terminated.

There would be no loss or damage to nesting, foraging, or perching habitats. Small increases may be expected due to the increased quantity and potentially quality of cover and forage. These increases would be expected to be immeasurable.

Trampling of nests by livestock would be eliminated.

There would be a small increase in nesting, foraging, and perching habitat over the next several decades as water set locations become revegetated. The increase would be very small, approximately 70 acres over a project area of approximately 89,320 acres or less than 1/10th of one percent.

CUMULATIVE EFFECTS – ALL ALTERNATIVES

Fuels treatments in the Fuzzy, Kelsey, and Opine project areas, including mowing, burning, and mowing and burning, would remove nesting, foraging, and perching habitat.

Species favoring shrub dominated sites would be least impacted by mowing. Mowing would remove the upper portions of the shrub component but leave the lower portions of the plant intact. Some nesting, foraging, and perching cover would be removed. No plants would be killed. Plants would be expected to recover and restore pre-mowing conditions within 3-5 years. Associated bird species would be expected to return to pre-treatment populations in approximately the same time span.

Species favoring grass and forb dominated sites would see an improvement in habitat because the increased light and decreased shrub competition would be expected to increase grass and forb reproduction. The increase would be temporary, gradually declining as the shrubs re-established dominance on the site. Pre-treatment conditions would be expected within 5-10 years.

Burning would be expected to favor species favoring grass and forb dominated sites. Depending upon the intensity of the burn, effects on shrubs could range from pruning of dead material to complete mortality. Cool burns would favor retention of shrubs and bird species that require shrub dominated habitats. Hot or intense burns would eliminate much of the shrub component and favor grass and forb communities. Recovery of the shrub component and the bird species associated with those communities could require several decades or more to return.

Mechanical mowing and burning increases the risk of ground nesting species losing nests. Nests would be crushed by machinery in mowed units and burned in burn units. Units with both mowing and burning would potentially be both crushed and burned.

Tree thinning proposed by these projects would be expected to result in a small decrease in available habitat. Understory vegetation is commonly depauperate or limited in quantity and distribution. Skid trails and landings would damage or destroy the vegetation in those high use areas.

In the longer term, 5-10 years or longer, the increased light levels coupled with increased availability of nutrients, space, and water would be expected to result in an increase in understory shrub, grass, and forb vegetation which would provide an increase in available habitat for birds. This increase would gradually decline towards pretreatment levels as the overstory tree canopy closed.

Removal of juniper on approximately 235 acres of juniper woodland would remove habitat for species favoring that unique habitat. It would favor species that favor sagebrush or shrubland habitats.

Old Growth Management Areas

Old Growth Management Areas (OGMA) are managed to provide large trees, abundant standing and downed dead trees, and vertical structure (multiple vegetative canopy heights). The exception is for OGMAs in lodgepole pine types where a single canopy level is common. OGMAs would vary in size and be located so that a wide variety of conditions are represented.

There are three (3) OGMAs within the Cinder Hill project area: OGMA 32, 99 acres in the Coyote Allotment; OGMA 82, 114 acres in the Cinder Hill Allotment; and OGMA F11, 1176 acres in the Pine Mountain Allotment.

There are two OGMA LRMP standards and guides relevant to grazing (4-150):

- **M15-7** Livestock grazing is generally not compatible with an old growth area.
- **M15-8** Exotic plants will not be introduced. Vegetative manipulation to enhance forage production or species composition for livestock consumption is not permitted.

The Forest Plan does not elaborate on the incompatibility between grazing and old growth. However, species that utilize old growth are also dependent on the grasses and shrubs within the understory of these areas. These species are predominantly birds.

ALTERNATIVE 1 – CURRENT MANAGEMENT; ALTERNATIVE 2 – PROPOSED ACTION; AND ALTERNATIVE 4 – GRADUAL GRAZING REDUCTION

DIRECT AND INDIRECT EFFECTS

Alternatives 1 and 4 would have no effect on OGMA 32. OGMA 32 is located in the western portion of the Coyote Allotment. The entire allotment would remain vacant under Alternative 1 and the western portion would be closed to grazing under Alternative 4.

Under Alternative 2, the allotment would be grazed intermittently and on an irregular basis. Proper distribution of water sets, pasture rotation, and attainment of stubble height utilization standards would have no measurable impact on the OGMA.

If stubble height standards are not met, over grazing by livestock could occur. This could result in soil compaction and vegetation loss. Soil compaction could increase the likelihood of premature death of individual trees or the stand. It may also hinder the growth and full development of individual trees in heavy use areas.

Over-grazing could potentially remove herbaceous habitat. This habitat provides essential forage and nesting habitat for passerines. It also provides habitat for prey species of overhead predators such as accipiters that utilize the overstory canopy.

Proper distribution of water sets, continued use of rest-rotation grazing, and attainment of stubble height utilization standards would have no measurable impact on OGMAs.

ALTERNATIVE 3 – NO GRAZING

DIRECT AND INDIRECT EFFECTS

Livestock grazing would be eliminated from all allotments and all three OGMAs. No habitat for birds would be removed by grazing. No tree mortality would be attributed to grazing. Habitat for prey species would not be reduced.

CUMULATIVE EFFECTS

There are no cumulative effects associated with OGMA 32 or 82. Neither the Kelsey nor Opine projects propose activities within or adjacent to either of those areas.

There would be impacts in OGMA F11 associated with proposed vegetation treatments in the Opine Vegetation Management EA.

In the short term, commercial tree thinning would damage or destroy understory vegetation on up to approximately 20 percent of the area through the use of machinery on landings and skid trails. This would reduce the available habitat for

species that use understory vegetation and habitats.

Longer term, the amount and distribution of understory vegetation would be expected to increase. Thinning would increase light levels at the forest floor. More space, nutrients, and water would be available for plant growth and regeneration. These increases would be expected to remain for several decades but would begin to decline toward pretreatment levels as the residual overstory tree canopy begins to close.

Non-commercial thinning would have similar results and impacts except that there would be no removal of material by machinery so there would be no damage or loss of vegetation that would be associated with skid trails and landings.

Fuel treatments associated with tree thinnings would reduce fuel loadings and ladder fuels. This would lower the risk of a high intensity fire and the risk of developing a crown fire. The potential of a fire damaging or destroying habitat within the OGMA would be reduced.

BOTANY

EXISTING CONDITIONS

Soils on Pine Mountain are mainly comprised of volcanic ash and some pumice lapilli over loamy colluvium and residual soils, as well as sandy volcanic ash and sandy to loamy residual soil on the ridge tops. Elsewhere within the project area, soils are generally comprised of sandy, pumiceous volcanic ash and pumice lapilli over sandy to loamy buried soils.

The plant associations that dominate Pine Mountain are big sagebrush-bitterbrush/bunchgrass, ponderosa pine/bitterbrush-manzanita/fescue, and ponderosa pine/bitterbrush/fescue. Elsewhere, plant associations include ponderosa/bitterbrush-sagebrush (rhyolite), ponderosa/bitterbrush/squirreltail (rhyolite), ponderosa/bitterbrush-sagebrush/fescue, lodgepole/bitterbrush (rhyolite), and big sagebrush/bunchgrass.

Elevations within the project area range from about 6500' on top of Pine Mountain to a low of about 4700', with butte tops somewhere in between. Average annual precipitation ranges from approximately 15-20".

Biological soil crusts, also known as microbiotic crusts, cryptogamic crusts, or cryptobiotic crusts, are an important part of the arid and semi-arid ecosystems of the intermountain west. These crusts are composed of lichens, mosses, microfungi, bacteria, and green algae that grow on top of the soil in a rough, uneven carpet, in the interspaces between shrubs and grasses. They function as a "biological mulch", helping to reduce wind and water erosion, fix atmospheric nitrogen, contribute to soil organic matter, retain soil moisture, enhance vascular plant regeneration, and help prevent noxious weed establishment, including cheat grass (U.S. Department of the Interior Technical Report 1730-2, *Biological Soil Crusts: Ecology and Management*, 2001 as cited in the Biological Crusts Write-up, page 1).

Most of the project area can be considered potential crust habitat. Soil crusts within the project area are patchy, existing predominately under shrubs where they have been protected from the hoof action of livestock, deer, and elk. In the mid-1990's, district personnel collected crust specimens from a number of places within the project area. These efforts determined that crust development was more continuous and the species diversity higher in long-term exclosures (30 years) than in crusts found outside the exclosures. No rare species were identified.

Studies have shown that livestock grazing is detrimental to crust cover and crust species richness. They suggest that the grazing of livestock within the project area has reduced the amount and coverage of crusts. There is no baseline information to identify pre-grazing distribution or coverage.

Wildfire has played an important role in the development and maintenance of rangeland and forest vegetation communities within

the project area. Fire cycles were variable ranging from approximately 14 years in ponderosa pine forests to approximately 35 years in shrub-steppe communities. Fires occurring prior to the initiation of fire suppression activities in the early part of the 20th Century are thought to have been of low intensity. A crust's structural matrix is generally left intact by low-intensity fire and unburned patches act as refugia to provide propagules to colonize burned areas. the allotments. Hot fires will generally kill biological crusts (USDI 2001 as cited in the Biological Crusts Write-up, page 2).

Grazing within the project area is believed to have started during the 1920s or 1930s (Don Sargent, pers. comm. 2/03 as cited in the Biological Crusts Write-up, page 2). It is probable that intense hoof action became the primary action causing breakdown of the integrity of the crusts.

Cheat grass (***Bromus tectorum***) entered the project area during the last century and has not left. This species is an annual exotic grass and as such can pose a long-term threat to biological soil crusts (USDI 2001). Such invasions have been shown to inhibit crust development (USDI 2001 as cited in the Biological Crusts Write-up, page 2). Places within the project area that are dominated or co-dominated by cheat grass include:

- the Skeleton Fire;
- water sets; and
- hunter camps.

Water sets and hunter camps also experience continued soil disturbance; the first from livestock congregating around the water tank; and the second from motorized vehicles. Continued soil disturbance also serves to inhibit crust integrity and survival.

THREATENED AND ENDANGERED SPECIES

The Regional Forester's Sensitive Species List (FSM2670.44, April 1999) lists 25 species for the Deschutes National Forest. Of those 25, only one (1), ***Arabis suffrutescens var. horizontalis*** (Crater Lake rockcress) is neither suspected nor documented on the Bend-Fort Rock Ranger District. Of the 24 documented or suspected species, six (6) are documented. The remaining 18 are suspected (Biological Evaluation (BE) - Proposed, Threatened, Endangered and Sensitive Plants – Cinder Hill Project, page 28 and Appendix B, Deschutes National Forest Sensitive Plant List).

The potential for sensitive plant species' habitat to occur in the project area was evaluated using the preceding information. Resources used to identify potential sensitive plant habitat were aerial photo interpretation, vegetation map information, as well as personal knowledge of the project area.

Based on the preceding information, a comparison with the habitat requirements of Bend/Ft. Rock Ranger District potential sensitive species indicates that these species exist within the project area:

Botrychium pumicola (BOPU). One population, 25 plants, and small amount of habitat in Pine Mountain allotment.

Castilleja chlorotica (CACH). Hundreds of sites and widespread habitat within Cinder Hill and Pine Mountain Allotments.

SURVEYS

Threatened, Endangered, and Sensitive (TES) plant surveys have been conducted over roughly 80 percent of the project area. Surveys have been conducted in the area over the past 12 years for various projects.

No habitat for Threatened or Endangered plant species exists within the project area.

Field surveys located one population of the pumice grape-fern (BOPU) of about 25 plants within the project area. This comprises 0.001percent of the global population (estimated at 24,000 plants). It is located in the southern portion of the Pine Mountain Allotment in the South Pasture.

Surveys located about 230 sites/populations of the green-tinged paintbrush (CACH) with an estimate population of approximately 26,000 plants. Approximately 6,000 are

located within the Cinder Hill Allotment and 20,000 in the Pine Mountain Allotment. No CACH has been located within the Coyote Allotment. These sites comprise the majority of CACH on the Deschutes National Forest. There are approximately 30,000 plants on the DNF, another 500,000 on the Fremont National Forest (Robert Wooley, pers. comm. as cited in the BE page 6), and an unknown but relatively small number on Bureau of Land Management lands (Ron Halvorson, pers. comm. as cited in the BE page 6). Plants located within the Cinder Hill project boundary constitute approximately 5 percent of the global population and 87 percent of the Deschutes National Forest population.

Within the Cinder Hill Allotment, approximately two thirds of the existing fence lines traverse know CACH habitat. Approximately 100 plants are estimated to be located adjacent to fence line. Both anecdotal evidence and formal monitoring of a few populations suggest that these individuals are co-existing with current levels of disturbance, both grazing and vehicle use to maintain fence lines. This suggests that the level of use is apparently low enough to maintain habitat integrity.

Within the Pine Mountain Allotment, approximately 90 percent (approximately 23 of the existing 26 miles) of the existing fence lines traverse CACH habitat. Most of the existing populations exist away from the fence lines. Both anecdotal evidence and formal monitoring of a few populations suggest that these individuals and populations are co-existing with current levels of disturbance, both grazing and vehicle use to maintain fence lines. This suggests that the level of use is apparently low enough to maintain habitat integrity.

CACH is found in mid- to late-seral stage shrub communities in this portion of its range. Years of fire exclusion and suppression within the project area have allowed shrubs to proliferate. Fire, because it removes or otherwise changes shrub communities and favors establishment of grasses and forbs, is the biggest threat to the continued persistence of CACH (meeting of CACH managers Robert Wooley, Ron Halvorson, Charmane Levack, and Katie Grenier, 3/12/02 as cited in the BE page 8). Catastrophic wildfire in these older shrub communities would likely kill existing CACH populations by eliminating the shrub hosts. This has been observed on both Forest Service and BLM managed lands (Ron Halvorsen, pers. comm. as cited in the BE page 8). These include both escaped prescribed fire burning through CACH populations and prescribed fire applied within CACH populations.

HABITAT DESCRIPTIONS

BOTRYCHIUM PUMICOLA

This inconspicuous plant is a perennial which may regrow from a bud located 1-3 inches below the ground surface. It reproduces through spore dispersal, and, vegetatively, through the formation of tiny underground buds called gemmae. It is endemic to Central Oregon open-canopy pumice soils at high elevations in the Oregon Cascades and Newberry Crater, and at lower elevations within a lodgepole pine matrix. Within the lodgepole pine matrix, it prefers relatively flat, open basins where frost heaving tends to prevent the establishment of tree seedlings and other vegetation.

CASTILLEJA CHLOROTICA

CACH, or green-tinged paintbrush, is a perennial eastern Oregon endemic, known only from Deschutes, Lake, and Klamath Counties. It has been found at elevations from 4300 to 8200 feet in open and forested ponderosa, lodgepole, and mixed conifer. It has also been found in non-forested sagebrush-bitterbrush types. Soils are often very poor and rocky.

The ***Castilleja*** genus is hemiparasitic. It contains chlorophyll and may or may not be able to complete its life cycle without a host species. Hemiparasites primarily draw water and minerals from the host. It is not known which species is the host for CACH, although it is suspected to be a shrub (Dr. Richard Everett, pers. comm. as cited in the BE page 14). On the Fremont National

Forest, upon which the majority of the known CACH population exists, the host is suspected to be sagebrush; on the Deschutes National Forest sites, it may be bitterbrush.

Successful CACH reestablishment after a fire or other disturbance may depend upon the reestablishment of its host.

ENVIRONMENTAL EFFECTS

EFFECTS COMMON TO ALL ALTERNATIVES

Issue 1: Vegetative conditions being outside the range of natural variability resulting in higher fuel loadings and larger, more intense wildfires.

This issue has no effect on threatened or endangered plant species. None are present in the project area.

Issue 2: Reduction or elimination of grazing on public lands.

This issue has no effect on threatened or endangered plant species.

Issue 3: Conflicts between grazing and wildlife.

This issue has no effect on threatened or endangered species.

Issue 4: Increasing risks of accidents and conflicts between grazing operations and other forest users.

This issue has no effect on threatened or endangered species.

ALTERNATIVE 1 – CURRENT MANAGEMENT

DIRECT AND INDIRECT EFFECTS

Crust health and distribution would continue to improve in the Coyote Allotment. The allotment would continue to remain vacant; no grazing would be permitted. Crusts would continue to expand into areas between shrubs. Damage associated with animal hoof action would be limited to deer and elk. The risk of loss or major damage from fire would be reduced as the population grows and becomes more well distributed.

There would be no change in the level or types of impacts expected on crusts in either the Cinder Hill or Pine Mountain Allotments under this alternative. There would be no change in livestock stocking levels. Crusts would be limited to areas beneath shrubs. Potential for loss due to wildfire would continue.

Crust health and distribution would continue to improve in pasture 1 of the Cinder Hill Allotment until livestock are reintroduced in 2006. Livestock were excluded from this allotment after the Evans West fire in 1996. Trees were replanted to replace stands killed by the fire. Livestock were excluded to protect the trees from grazing until either 2006 or the trees large enough to withstand the effects of grazing. Improvements in crust health and distribution would cease and existing populations would regress to conditions present in other actively grazed pastures. Crusts would be relegated to areas beneath shrubs and face an increased risk of loss from wildfire.

Crust health and distribution would continue to improve in pasture 3 of the Cinder Hill Allotment. Crusts would continue to expand into areas between shrubs. Damage to crusts associated with animals would be limited to deer and elk. Under this alternative, a new pasture and boundary fence along the southwest boundary would not be authorized. Livestock are currently excluded from this pasture because there are no natural barriers or fence lines to prevent livestock from trespassing into the NNVM.

There would be no effect to threatened or endangered plant species (PETS). No species have been found within the three (3) allotments. No habitat for such species has been identified within the three (3) allotments.

Habitat and populations for two (2) sensitive species, green tinged paint brush (CACH) and the pumice grape fern (BOPU), have been identified.

Botrychium pumicola

Issue 1: Vegetative conditions being outside the range of natural variability resulting in higher fuel loadings and larger, more intense wildfires.

This issue would be expected to have little or no effect on this species. There is no information or knowledge available regarding the effect of fire on this species. However, vegetative communities in which this species is found in the project area, low sagebrush, are characterized by limited amounts of vegetation and low fuel loadings. Local experience suggests that a fire would be very low intensity and unlikely to spread. The risk to the population would be very low.

There are no expected direct or indirect effects on the population of this species with the continuance of existing management activities within the project area.

Issue 2: Reduction or elimination of grazing.

This issue does affect this species. There is the potential for current practices to reduce or eliminate the local population. The population, 25 plants, is located near water set. Elimination of grazing would eliminate the potential of grazing directly or indirectly damaging or eliminating the population.

Effects of past grazing to the population have not been documented. Cattle walked through the population in 2002 (Don Sargent, pers. comm. as cited in the Botany Report page 7). Water sets are characterized by the lack of vegetation and trampled and churned soils.

BOPU prefer loose soil. Hoof action of livestock could churn up the soil, expose the roots of the plants and thereby kill the plants.

If all plants within this local population were killed, it would not cause a trend toward Federal listing. It is a very small population and a very small percentage of the overall global population.

It is not desirable to lose populations at the edge of a species range. Current opinion considers that these populations carry genetic information important to the continuation of healthy populations of the species.

Issue 3, conflicts between livestock and wildlife; and

Issue 4, increasing risks of accidents and conflicts between grazing operations and other forest users.

These issues have no effects on this species.

There would be no effects on the species or its habitat as a result of fence construction, new water set placement, placement, removal, replacement, or construction of road cattleguards, or the removal of fences. These activities are not proposed under this alternative.

There would be no effect leaving the three (3) trick tanks in the Pine Mountain Allotment. None are located in or adjacent to BOPU habitat or populations.

Castilleja chlorotica

Issue 1, vegetative conditions being outside the range of natural variability and resulting in higher fuel loadings and larger, more intense wildfires.

This issue does affect this species. It is not adapted to fire and individuals and/or populations would be expected to be damaged or killed. High intensity fires are harder to control, resulting in larger areas being burned. Populations are more likely to be affected.

In Alternatives 1, 2, and 4 grazing would help to reduce fine fuel loadings. This potentially would slow a wildfire and allow it to be controlled before reaching or burning through a CACH population. Under Alternative 4, no grazing would occur and fine fuel loadings would not be reduced.

The likelihood of a fire being slowed or controlled before reaching a CACH population would be reduced.

Issue 2, Reducing or eliminating grazing.

This issue would have little or no effect on this species. Cattle have not been noted to eat CACH, on either the Deschutes NF or the Winema NF. Drought conditions during the summer of 2002 did result in cattle grazing a population due to the lack of other forage. Cattle have been observed to eat CACH on the BLM managed lands. The potential for livestock to graze a specific plant or local population is present but the risk to the larger population is low.

CACH monitoring over the past eight (8) years has revealed two (2) populations that have been laid on and exterminated by cattle. The potential for damage to or loss of a specific population is present but is considered to be low and would not affect the overall population of the species.

Cattle trailing or congregating along fences may trample or destroy individual plants. The number of plants affected would be very limited in number to the entire population. The area of impacts would be localized. The potential for damage to or loss of a specific population is considered to be low and would not affect the overall population of the species.

Alternative 3 would eliminate grazing. There would be no risk of livestock grazing, trampling, lying on or damaging individual plants or the species.

Issue 3, conflicts between livestock and wildlife; and

Issue 4, the increasing risk of accidents and conflicts between grazing operation and other forest users.

These issues have no effect on this species.

There are few other expected direct or indirect effects with the continuance of existing management activities within the project area.

Maintenance of existing improvements in Alternatives 1, 2, and 4,the construction of new improvements (fences, water sets, etc.) in Alternatives 2 and 4, and the removal of existing improvements in Alternative 3 could result in damage to or destroy individuals within local populations where fences, water sets, trick tanks or other improvements are located within or adjacent to such populations. Such operations are limited in duration and extent and impacts to local populations are likely to be limited in duration and to relatively few individuals.

ALTERNATIVE 2 – PROPOSED ACTION

DIRECT AND INDIRECT EFFECTS

Crust health and distribution would continue to improve in the western portion of the Coyote Allotment (new Bessie Allotment) but at a slower rate than at present. Grazing would be more episodic and limited in duration with the potential of having several consecutive years without grazing and allowing periods of recovery

Continued improvement of crust health and distribution would be halted in the eastern portion of the Coyote Allotment. Conditions would regress to those found in other pastures where grazing has continued. Crusts would be limited to areas beneath shrubs.

Combined with the Cinder Hill Allotment, livestock would be reintroduced when new pasture and allotment boundary fences are constructed. This would likely occur within three years. Pasture 1, closed to grazing after the Skeleton fire in 1996 to protect planted trees, would continue to exclude livestock until 2006 or until the planted trees were determined to be able to withstand renewed grazing. Until livestock were reintroduced into the pasture, crust health and distribution would continue to improve.

There would be no change in the level or types of impacts expected on crusts in either the Cinder Hill or Pine Mountain Allotments under this alternative. There would be no change in livestock stocking levels. Crusts would be limited to areas

beneath shrubs. Potential for loss due to wildfire would continue.

Crust health and distribution would continue to improve in pasture 1 of the Cinder Hill Allotment until livestock are reintroduced in 2006. Livestock were excluded from this allotment after the Evans West fire in 1996. Trees were replanted to replace stands killed by the fire. Livestock were excluded to protect the trees from grazing until either 2006 or the trees large enough to withstand the effects of grazing. Improvements in crust health and distribution would cease and existing populations would regress to conditions present in other actively grazed pastures. Crusts would be relegated to areas beneath shrubs and face an increased risk of loss from wildfire.

Crust health and distribution would continue to improve in pasture 3 of the Cinder Hill Allotment until the new pasture and boundary fence proposed for the southwest boundary is constructed. Livestock are currently excluded from this pasture because there are no natural barriers or fence lines to prevent livestock from trespassing into the NNVM. Construction of this fence would be expected within three (3) years. Reintroduction of livestock in this pasture would result in eliminating improvements in crust health and distribution. Existing populations would regress to conditions present in other actively grazed pastures. Crusts would be relegated to areas beneath shrubs and face an increased risk of loss from wildfire.

There would be no effect to threatened or endangered plant species (PETS). No species have been found within the three (3) allotments. No habitat for such species has been identified within the three (3) allotments.

Habitat and populations for two (2) sensitive species, green tinged paint brush (CACH) and the pumice grape fern (BOPU), have been identified.

Botrychium pumicola

There would be no effects on the species or its habitat as a result of fence construction, new water set placement, placement, removal, replacement, or construction of road cattleguards, or the removal of fences located in the Coyote or Cinder Hill Allotments. Neither the species nor its habitat is present in these allotments.

Repair of two (2) trick tanks and removal of a third would have no effect on individual plants, the local population or its habitat. None of the trick tanks are located near the known population or any habitat.

Castilleja chlorotica

In addition to the effects common to all alternatives for this species, the following additional effects would be expected under this alternative.

Placement, removal and relocation of cattle guards would have no effect on individuals or populations. These activities would occur within road prisms and on sites already disturbed by road construction and maintenance. Disturbance of existing habitats is expected to be non-existent or very limited in extent.

The establishment of seven (7) new water sets within the Cinder Hill Allotment would have little or no effect on existing populations. Four (4) water sets are proposed in the Coyote Allotment pastures being added to the Cinder Hill Allotment. These new water sets would have no effect on either individual plants or populations. Neither plants nor habitat has been identified in the Coyote Allotment.

Three (3) new water sets are proposed for pasture 5 of the Cinder Hill Allotment. These water sets may impact individuals or local populations. Water sets are characterized by bare soil and are devoid of vegetation. Much of this allotment is good CACH habitat. These new water sets would reduce current available habitat by approximately three (3) acres.

Closure of eight (8) existing water sets would result in revegetation within a relatively short time period, five (5) to 10 years or less. Typically such sites are colonized and dominated by cheat grass, an

exotic species. This would preclude recovery of habitat for CACH until such time as its host species, probably bitterbrush, recolonizes the site.

Subsoiling closed water sets would have the same affects on CACH as closing the water set and not subsoiling. Cheat grass would initially recolonize the site; native vegetation recovery would still require approximately 10 years or more. It is unknown how long it would take for CACH to recolonize the site.

Thirty-seven (37) water set sites in the Cinder Hill Allotment and 12 in the Pine Mountain Allotment would remain in use. All are located within CACH habitat. Approximately 49 acres associated with those water sets would remain devoid of vegetation and unavailable for recolonization by CACH or its host species.

Reopening approximately one and one quarter (1.25) miles of obliterated road segments would have no effect on existing populations or habitat of this species. No populations or habitats have been identified within the Coyote Allotment.

CACH monitoring over the past eight (8) years has revealed two (2) populations that have been laid on and exterminated by cattle. The potential for damage to or loss of a specific population is present but is considered to be low and would not affect the overall population of the species.

Combining the east portion of the Coyote Allotment with the Cinder Hill Allotment would have no affect on CACH. No populations have been identified within the Coyote Allotment.

Cattle have not been noted to eat CACH, on either the Deschutes NF or the Winema NF. Drought conditions during the summer of 2002 did result in cattle grazing a population due to the lack of other forage. Cattle have been observed to eat CACH on the BLM managed lands. The potential for livestock to graze a specific plant or local population is present but the risk to the larger population is low.

Grazing does reduce fine fuel loadings. This potentially would slow a wildfire and allow it to be controlled before reaching or burning through a CACH population.

Repair of two (2) trick tanks and removal of a third would have little or no effect on individual plants, the population or its habitat. All three (3) exist in or adjacent to habitat or populations of CACH. Habitat is considered to be good but is not prime CACH habitat.

Repair and continued use of two (2) tanks would be expected to result in damage or mortality of individual plants associated with the concentration of livestock trampling and grazing as they come to water at the tanks. There are no plants or habitat immediately adjacent to the tanks as they have been in place for many years. Soils are exposed and the area immediately around the tank devoid of vegetation because of the concentration of livestock. Impacts would be limited to those plants and populations at the edges of those areas. Under the rest rotation grazing system, these areas would not be grazed one year in four and grazed at different times during the season during the other three (3). This would allow plants to reach different stages of development and thereby maintain health and vigor.

ALTERNATIVE 3 – NO GRAZING

DIRECT AND INDIRECT EFFECTS

Crust health and distribution would continue to improve in all four (4) pastures of the Coyote Allotment and in pastures 1 and 3 of the Cinder Hill Allotment. All are currently vacant; this alternative would close them to grazing permanently. Crusts would continue to expand into areas between shrubs. Damage associated with animal hoof action would be limited to deer and elk. The risk of loss or major damage from fire would be reduced as the population grows and becomes more well distributed.

Crust health and distribution would be expected to begin to improve. Pastures 2, 4, and 5 are currently active within the Cinder Hill Allotment. All four (4) pastures are currently active within the Pine Mountain

Allotment. Removal of livestock would allow existing crusts to expand into unoccupied spaces between shrubs. Damage associated with animal hoof action would be limited to deer and elk. The risk of loss or major damage from fire would be reduced as the population grows and becomes more well distributed.

Permittees would have up to two (2) years to remove livestock. Removal of improvements such as fences and cattle guards, owned by the Government, would take longer depending upon budgets and personnel. Damage or destruction to crusts immediately adjacent to such improvements would be expected but limited in to areas where the improvements are removed. Duration of impacts would be limited to the period of removal.

Closing of water sets would likely result in revegetation by cheat grass. Native vegetation would likely dominate the sites within a decade. Recolonization by crusts would be expected as native vegetation recovers. Similar impacts would be expected where water sets were subsoiled.

There would be no effect to threatened or endangered plant species (PETS). No species have been found within the three (3) allotments. No habitat for such species has been identified within the three (3) allotments.

Castilleja chlorotica

In addition to effects described previously, the following additional effects are specific to this alternative.

Closure of 49 existing water sets, 37 in Cinder Hill and 12 in Pine Mountain, would result in revegetation within a relatively short time period, five (5) to 10 years or less. Typically such sites are colonized and dominated by cheat grass, a non-native exotic species. This would preclude recovery of habitat for CACH until such time as its host species recolonizes the site.

Subsoiling closed water sets would have the same affects on CACH as closing the water set and not subsoiling.

Removal of the three (3) trick tanks would result in similar effects as expected for individuals and populations adjacent to closed water sets. Approximately three (3) acres of potential habitat would be restored within 5-10 years as native vegetation recovered.

ALTERNATIVE 4 – GRADUAL GRAZING REDUCTION

DIRECT AND INDIRECT EFFECTS

Crust health and distribution would continue to improve in the western portion of the Coyote Allotment. This portion of the allotment would be closed; no grazing would be permitted. Crusts would expand into spaces between shrubs. Damage to crusts from animals would be limited to that associated with deer and elk. Over the long term, the risk of loss or major damage associated with fire would be reduced.

Continued improvement of crust health and distribution would be halted in the eastern portion of the Coyote Allotment. Conditions would regress to those found in other pastures where grazing has continued. Crusts would be limited to areas beneath shrubs.

Combined with the Cinder Hill Allotment, livestock would be reintroduced when new pasture and allotment boundary fences are constructed. This would likely occur within three years. Pasture 1, closed to grazing after the Skeleton fire in 1996 to protect planted trees, would continue to exclude livestock until 2006 or until the planted trees were determined to be able to withstand renewed grazing. Until livestock were reintroduced into the pasture, crust health and distribution would continue to improve.

There would be no change in the level or types of impacts expected on crusts in either the Cinder Hill or Pine Mountain Allotments under this alternative. There would be no change in livestock stocking levels. Crusts would be limited to areas beneath shrubs. Potential for loss due to wildfire would continue.

Crust health and distribution would continue to improve in pasture 1 of the Cinder Hill Allotment until livestock are reintroduced in 2006. Livestock were excluded from this allotment after the Evans West fire in 1996. Trees were replanted to replace stands killed by the fire. Livestock were excluded to protect the trees from grazing until either 2006 or the trees large enough to withstand the effects of grazing. Improvements in crust health and distribution would cease and existing populations would regress to conditions present in other actively grazed pastures. Crusts would be relegated to areas beneath shrubs and face an increased risk of loss from wildfire.

Crust health and distribution would continue to improve in pasture 3 of the Cinder Hill Allotment until the new pasture and boundary fence proposed for the southwest boundary is constructed. Livestock are currently excluded from this pasture because there are no natural barriers or fence lines to prevent livestock from trespassing into the NNVM. Construction of this fence would be expected within three (3) years. Reintroduction of livestock in this pasture would result in eliminating improvements in crust health and distribution. Existing populations would regress to conditions present in other actively grazed pastures. Crusts would be relegated to areas beneath shrubs and face an increased risk of loss from wildfire.

Crust health and distribution would be expected to improve when the Cinder Hill and Pine Mountain Allotments are vacated by the permittees. Removal of livestock would allow existing crusts to expand into unoccupied spaces between shrubs. Damage associated with animal hoof action would be limited to deer and elk. The risk of loss or major damage from fire would be reduced as the population grows and becomes more well distributed. It is unlikely that either allotment would be vacated by either existing permittee within then 10-year time period of the new permits.

Permittees would have up to two (2) years to remove livestock. Removal of improvements such as fences and cattle guards, owned by the Government, would take longer depending upon budgets and personnel. Damage or destruction to crusts immediately adjacent to such improvements would be expected but limited in to areas where the improvements are removed. Duration of impacts would be limited to the period of removal.

Closing of water sets would likely result in revegetation by cheat grass. Native vegetation would likely dominate the sites within a decade. Recolonization by crusts would be expected as native vegetation recovers. Similar impacts would be expected where water sets were subsoiled.

There would be no effect to threatened or endangered plant species (PETS). No species have been found within the three (3) allotments. No habitat for such species has been identified within the three (3) allotments.

Habitat and populations for two (2) sensitive species, green tinged paint brush (CACH) and the pumice grape fern (BOPU), have been identified.

CUMULATIVE EFFECTS COMMON TO ALL ALTERNATIVES

Vegetation management activities proposed or completed within the Kelsey, Fuzzy and Opine project areas are expected to result in additional damage to or loss of existing crusts beyond that expected and experienced from grazing.

The Opine project area, which overlaps the eastern portion of the Cinder Hill and all Pine Mountain Allotments, proposes to treat approximately 20,000 acres of forest and rangeland. This includes approximately 7,700 acres of commercial and non-commercial tree harvest with approximately 4,600 acres of slash treatments using prescribed fire. Approximately 12,500 acres of predominately rangeland would be burned using broadcast burning and burning beneath the driplines of trees to reduce fuel loadings. Harvest operations would use ground skidding equipment. This would result in soil disturbance and removal of or damage to ground vegetation and crusts at

landings and in and immediately adjacent to skid trails.

Prescribed burning to reduce fuel loadings from harvest activities and to reduce natural fuel loadings on other sites would include the construction of hand line. This would result in soil disturbance and the removal of vegetation and crusts. Crusts adjacent to line construction would potentially be fragmented into smaller pieces. The relatively high fuel loadings (relative to historic levels) would also be expected to result in loss or damage to crusts within the burn unit. Potential for loss or damage would be reduced in units where burning was limited to areas beneath the dripline of trees because of the more limited distribution of host shrub species and lack of suitable habitat.

Soil disturbance associated with harvest and burning activities would create conditions suitable to cheat grass colonization. This would prevent crust re-establishment until native vegetation was successful in recolonizing the site. This could take years to decades depending upon the site and the extent of the disturbance.

The Fuzzy EA proposed approximately 15,000 acres of fuels reduction treatments using broadcast burning, burning beneath the dripline of trees, and mowing. It also proposed approximately 9,250 acres of vegetation treatments, including timber harvest using ground based equipment, in units located within the boundaries of the Cinder Hill project area. Activities were proposed within the eastern portion of the Coyote Allotment and the western two thirds of the Cinder Hill Allotment. Effects would be similar to those described for the Opine project above.

Within the western portion of the Coyote Allotment, the Kelsey Vegetation Management EA proposes approximately 4,908 acres of fuels reduction using broadcast burning, burning beneath driplines and mowing. It also proposes approximately 3,134 of vegetation treatments including commercial and non-commercial timber harvest using ground based equipment with fuels treatments and approximately 1,428 acres with no fuels treatments. Effects would be similar to those described for the Opine project above.

The Opine Vegetation Management EA proposes to close the project area outside of the East Fort Rock OHV area to off-highway vehicle use except on designated roads and trails. This includes all of the Pine Allotment east of Road 23. The remainder of the Pine Allotment and all of the Cinder Hill Allotment in the project area (approximately 24,000 acres) are currently closed to off-highway vehicle use except on designated trails and roads. Approximately 31,000 acres currently open to OHVs and four-wheel drive vehicles would be closed. Damage or destruction of crusts associated with indiscriminate and unregulated use of these vehicles would be eliminated. Loss of crusts associated with establishment of designated trails would be expected but would be limited to areas immediately adjacent to existing trails and where new trails were constructed.

The Kelsey Access Management EA proposes a similar closure for the entire Kelsey project area outside of the Newberry National Volcanic Monument, approximately 28,000 acres. Effects would be similar to those expected in the Opine project area. However, the Coyote Allotment is currently vacant and has been since 1992. It is expected that crusts would begin recolonizing the areas between shrubs and that species richness within crusts would also increase.

The Kelsey Access Management EA would also establish an approximately 55 mile designated OHV trail system within much of the Coyote Allotment south of Road 18. Crusts would be damaged or destroyed where new trails were constructed and OHV use occurred. Damage would be limited to areas immediately adjacent to the trail. Some widening of trails would be expected from use. Proper design, use of vegetation and other barriers, education, and monitoring would be expected to keep this

to a minimum which would also minimize damage to additional crust areas.

Recolonization is being affected by other activities, both nature and human induced. Increasing urbanization along the forest boundary along with increasing unrestricted OHV use, increasing recreational use including horseback riding and mountain biking, dogs, and deer use limit opportunities for crust recovery. Impacts from these uses and activities are greatest near the forest boundary and along major roads such as Road 18. They would remain even with the restrictions proposed for off-highway vehicle use. Crust recovery would be expected to be faster away from these activities. Returning grazing to this allotment at some point in the future and as a result of a future decision would further slow the process and prevent recolonization of spaces between shrubs.

The Fuzzy project area would remain open to unrestricted OHV and four-wheel drive use. Approximately one third of the project area is located within the East Fort Rock OHV area and is therefore closed to off-highway vehicle use except on designated roads and trails. Effects to crust populations are limited to areas immediately adjacent to trails. These are limited in area and number. There would no additional effects under this alternative.

The remainder of the Fuzzy project area is open to unrestricted off-highway vehicle use. Such use would continue to damage or destroy existing crusts. Crust size and distribution would be expected to decrease with increasing numbers of user created trails. This would be expected to continue until a decision was made to close the area to unrestricted use and require OHVs and four-wheel drives to remain on designated roads and trails. This is expected within the next decade when the LRMP is revised.

Botrychium pumicola

Maintaining current practices would have no cumulative effects on this species or its habitat. No additional actions are proposed under this alternative that would increase the intensity or duration of effects currently experienced by the species or its habitat.

Prohibiting motorized vehicle use off designated roads and trails as proposed in the Opine Vegetation Management EA would eliminate the risk of damage or destruction of individual plants and the population from unregulated use. Mortality to individuals or the population due to exposed of roots resulting from soil disturbance associated with off-road vehicle (OHV, four-wheel drive vehicles, etc.) would also be eliminated.

Designating Pine Mountain east of Road 23 as closed to off-road vehicles except on designated roads and trails as proposed by the Opine Vegetation Management EA in conjunction with the designation of an OHV route system on Pine Mountain under the Opine Access Management EA would eliminate the threat of off-road use damaging or destroying this population. Pine Mountain east of Road 23 and north of Road 2017 would be closed to OHV use except on designated routes. No routes would be designated or located near the existing population.

Castilleja chlorotica

Maintaining current practices would have no cumulative effects on this species or its habitat. No additional actions are proposed under this alternative that would increase the intensity or duration of effects currently experienced by the species or its habitat.

The Opine vegetation management project proposes to treat approximately 20,200 acres of forest and rangeland vegetation to reduce fuels and fuel loadings. CACH populations within proposed burn units would be buffered or have been eliminated from within unit boundaries. This would reduce or eliminate the risk of prescribed fire damaging or destroying all or portions of local populations. Providing buffers, including those created by prescribed fire, would likely result in the retention or protection of more populations than would likely remain after a wildfire.

Burning would increase the availability of forage species such as grasses and forbs that are favored by livestock. This would reduce the potential of livestock grazing on the CACH.

Mechanical mowing would also reduce the risk of damage or loss of existing populations. Mowing would reduce fuel loading reducing the severity of a fire in the area. It would also improve the ease of control and increasing the probability of the fire being controlled before entering CACH populations.

Fire, both prescribed and wild, would reduce the available habitat for this species. Shrub recovery, depending on site and the intensity of the fire, could take several decades. Recovery of CACH populations, dependant upon the shrubs, could take as long or longer.

Actions proposed in the Kelsey Vegetation Management EA, the Kelsey Access Management EA and the Fuzzy EA would have no effect on existing individuals or populations of the species as there are neither known populations of the species in those project areas nor is there identified habitat.

COMPARISION OF ALTERNATIVES

THREATENED AND ENDANGERED SPECIES

There are no threatened or endangered plant species or habitats within the project area. There would be no effect to such species under all alternatives.

SENSITIVE SPECIES

Two (2) Region 6 sensitive species are found in the project area; pumice grape fern (***Botrychium pumicola***) and green tinged paintbrush (***Castilleja chlorotica***).

Botrychium pumicola

Alternative 3 provides the greatest protection to the population. It protects the population at the base of Pine Mountain without having to expend time, effort, and money on a fence, and any habitat nearby not currently occupied.

Alternatives 1 and 2 maintain the greatest risk of damage or loss of individuals and the existing population because grazing is not removed from the site. The potential for loss or damage to individuals and the population is low. There have been no observable changes in population numbers, distribution or individual plant losses.

Alternative 4 provides the greatest protection to the existing population and habitat of the three action alternatives. It fences the population and a portion of existing potential habitat from grazing.

Alternatives 1, 2, and 4 do not pose a major threat to BOPU as a whole and would not cause a trend toward Federal listing.

Castilleja chlorotica

Alternative 3 provides the greatest protection to this species due to the cessation of grazing by livestock. It would eliminate any possibility of plants being trampled or eaten by livestock. It would also eliminate effects associated with the construction and maintenance of improvements and would result in the restoration of approximately 52 acres of potential habitat currently unavailable because of water sets and trick tanks.

This alternative does increase the potential for loss associated with wildfire. Removing livestock removes one means of reducing or removing fine fuels, slowing the spread of wildfire and assisting fire crews in controlling such fires. This would be mitigated by fuels reduction activities proposed as part of the Opine Vegetation Management EA.

Alternatives 1, 2, and 4 have a greater potential to impact individuals and habitat than does alternative 2 because grazing is continued. Because CACH is not present in the Coyote Allotment, closing the west portion of the allotment in alternative 4 does not result in any differences between the action alternatives.

Despite the greater potential to impact individuals and habitat in the three action

alternatives, the effects of grazing between the action alternatives and the no grazing alternative are minor. The cumulative effects of the proposed fuels reduction treatments proposed under the Opine Vegetation Management EA have a greater potential to affect individuals, populations and habitat.

In summary, the analysis of effects on species viability of both ***Botrychium pumicola*** and ***Castilleja chlorotica*** found the following:

Alternatives 1, 2, and 4: The Cinder Hill project may impact individuals or habitat, but will not likely contribute to a trend towards Federal listing or cause a loss of viability to the population or species.

Alternative 3: The Cinder Hill project will have no impact to these species.

NOXIOUS WEEDS/INVASIVE PLANTS

EXISTING CONDITIONS

Forest Service Manual (FSM) direction requires that Noxious Weed Risk Assessments be prepared for all projects involving ground-disturbing activities. For projects that have a moderate to high risk of introducing or spreading noxious weeds, Forest Service policy requires that decision documents must identify noxious weed control measures that will be undertaken during project implementation (FSM 2081.03, November 29, 1995).

Region 6, USDA Forest Service issued new direction regarding the implementation of invasive plant contract provisions for timber sales, stewardship contracts, road packages and service contracts. These projects are required to include provisions to minimize the introduction and spread of Invasive Plants, pursuant to Executive Order 13112 dated February 3, 1999. It defines invasive plants as "… any plant species not native to a particular ecosystem that are likely to cause economic or environmental harm, or harm to human health. The letter includes a copy of Executive Order 13112 and implementation guidelines for these provisions including range management activities. The implementation guidelines apply to "… **,** service contracts, or any project with operations involving "Off-road equipment."

The implementation guidelines include eight (8) general weed prevention goals and 22 practices for site-disturbing projects and maintenance programs. There are also five (5) goals and 11 practices specific to grazing.

Aggressive non-native plants, including noxious weeds, can invade and displace native plant communities causing long-lasting management problems. Noxious weeds can displace native vegetation, increase fire hazards, reduce the quality of recreational experiences, poison livestock, and replace wildlife forage. Weeds reduce biological diversity and threaten rare habitats by simplifying complex plant communities. There are 26 documented or potential noxious weeds identified in the Deschutes National Forest Noxious Weed List (October 31, 1997 as cited in Appendix A, Noxious Weed Assessment for the Cinder Hill Project). Fifteen (15) are documented on the Forest. The remaining nine (9) have the potential to be found on the Forest (Appendix A and pages 5-6 "Noxious Weed Risk Assessment for the Cinder Hill Project").

In addition to noxious weeds, which are designated by the State, there is a group of non-native plants that are also aggressive though are not officially termed "noxious". These species are also included in this assessment.

Existing populations are located predominately along roads in the Coyote and Pine Mountain Allotments.
Such sites are characterized by exposed soils, continuing or regular soil disturbance, and the lack of native vegetative cover.

There are 70 existing water sets located within the Cinder Hill Project Area. Used to provide water for livestock, these sites are characterized by bare soils and an often

complete lack of vegetation caused by livestock congregating to drink. The average size of a water set, including the placement of the tank or tanks and the area of exposed soil and little or no vegetative cover, is estimated to be approximately one (1) acre per site. When not in use, and often when being using during the grazing season, these sites are used for dispersed camping and staging areas for off-highway vehicles (OHV).

To date, anecdotal evidence, surveys and monitoring of resource management activities including grazing, have found no evidence or identified no sites or populations of noxious weeds that can be attributed to the grazing of livestock. This is supported by the fact that known populations are located along roads, in cinder or rock pit sites and other sites characterized by continually disturbed soils and the lack of vegetative cover.

Invasive non-native species, predominately cheat grass, are present in the project area. They occur predominately around water sets, both current and closed. Water sets are characterized by bare soils and devoid of vegetation. When closed or not used for a period of time, generally several years, they are rapidly colonized by cheat grass which is able to become established and grow before other native vegetation can become established. Continued disturbance, such as that resulting from dispersed camping and OHV use, helps to maintain the dominance of the cheat grass and prevents native species from become established. If left undisturbed, native species will become established and eventually dominate the site. Cheat grass does remain in limited numbers and distribution. It will expand if the site is again disturbed.

ENVIRONMENTAL EFFECTS

ALTERNATIVE 1 – CURRENT MANAGEMENT; ALTERNATIVE 2 – PROPOSED ACTION; AND ALTERNATIVE 4 – MODIFIED PROPOSED ACTION

DIRECT AND INDIRECT EFFECTS

Issue 1, vegetative conditions outside the range of natural variability resulting in higher fuel loadings and larger, more intense wildfire, does affect noxious weeds and other invasive plants by removing native vegetation and creating habitat suitable for colonization by weeds and other invasives. Coupled with other management and human activities, this has the potential to introduce new species and spread existing populations.

Issue 2, reducing or eliminating grazing on public lands, has a limited, immeasurable effect on noxious weeds and other invasives. There is no evidence of livestock spreading noxious weeds or other invasives within the Cinder Hill project area. All known weed populations are located along transportation corridors, primarily roads.

Reducing or eliminating grazing would eliminate all vehicle traffic associated with grazing operations. A small reduction in risk would be expected. The relatively small numbers of vehicles involved and the relatively short time frames would be masked by the larger numbers and seasons of use by recreational and other vehicles.

Issues 3, conflicts between grazing and wildlife, and 4, increasing risks of accidents between grazing operations and other forest users, would have no effect on noxious weeds and other invasives.

These alternatives have a high risk rating because:

- there are noxious weeds within the project; and
- cattle have been shown to be a major factor in increasing the vulnerability of plant communities to weed invasion.

Belsky and Gelbard (as cited in the Noxious Weed Report, page 4) cite selective grazing (choosing native forage over weeds, thus increasing the weeds), trampling, and hoof action as patterns which exacerbate weed introductions and spread. They cite studies

that show that hoof action damages protective soil crusts, creates safe sites for weed seeds, increases soil nitrogen levels, creates competition-free patches of bare ground that are open to invasion, and may play a role in reducing mychorrhizae numbers in the soil. They also indicate that cattle have also been shown to create "locally-enriched" areas of high nitrogen which favors weeds such as cheat grass and medusahead.

It is unknown how often livestock may come in contact with known weed populations. Such populations are primarily limited to roadsides on Pine Mountain and in the Coyote Allotment. Seed or plant parts may be caught and carried by hooves and hair. Livestock may also bring in weeds from their previous pasture.

There is also the potential for cattle trucks, water trucks, OHVs used to tend fences and herd cattle, and other vehicles associated with the cattle operation to bring in weed seeds via tires and undercarriages.

There is a low potential of establishing new weed populations away from roadsides. There are no known populations of any weed species away from roads.

CUMULATIVE EFFECTS

Vegetation management activities, including tree thinning, mowing, and prescribed burning, proposed under the Kelsey, Opine, and Fuzzy EAs have the potential to increase the risk of introduction and spread of noxious weeds and other invasive plants. These activities expose mineral soil.

Vehicles, including heavy equipment, have the potential to transport seed and plant parts between sites in addition to bringing them in from other areas or transporting them to other areas.

Contract clauses requiring the washing of contractor and permittee vehicles prior to entering National Forest lands would help to reduce the risk of introduction and spread of noxious weeds. Such clauses are standard requirements in timber sale and service contracts and grazing permits.

Livestock trailing or grazing through treated areas may also move seed or plant parts from existing infestations into recently disturbed areas.

Closing roads as proposed under the Kelsey and Opine Access Management EAs would result in a short-term increase in risk if the they are closed by subsoiling or other soil disturbing methods. Long term, reducing open road mileage would reduce the amount of potential habitat and reduce the risk of infestations occurring within those areas.

Restricting OHV use to designated routes would further reduce the risk of spreading noxious weeds. Area closures would reduce the amount of area open to off-road and OHV use. Areas of risk would be limited to trails and staging areas. Risks would be further reduced by OHV users practice of washing their vehicles after use.

ALTERNATIVE 3 – NO GRAZING

DIRECT AND INDIRECT EFFECTS

This alternative would have a HIGH risk rating until all livestock and improvements were removed. Livestock would be removed within two (2) years. Removal of improvements such as fences and cattle guards would be performed by the Forest Service and would depend upon the availability of personnel and budgets. Removal of cattleguards would require the use of heavy equipment. Removal of fences would likely be done using OHVs and pickups or similar vehicles. Removals could take a decade or longer.

Upon removal of livestock and improvements, this alternative would have a LOW risk ranking because those vectors—cattle and associated vehicles—would no longer be present.

CUMULATIVE EFFECTS

Cumulative effects under this alternative are similar to those for Alternatives 1, 2, and 4 except that there would be on livestock present. This would eliminate the risk of livestock transporting seed or plant parts

from existing infestations to new areas, including newly disturbed soils.

Elimination of grazing would also eliminate the risk of noxious weeds being transported by the permittee's vehicles. The reduction in the risk would limited given the limited number of vehicles and trips that would be made during the grazing season.

SOILS

EXISTING CONDITIONS

LANDSCAPE CHARACTERISTICS

The Cinder Hill project area is located north and northeast of Newberry Crater, where essentially all landforms, rocks, and soil are products from volcanic events that occurred over various time periods. The landscape is generally characterized by gentle to uneven lava plains with numerous cinder cones associated with the Newberry Crater complex.

Elevation ranges from about 3,900 feet near the northern boundary of the Coyote Allotment to 6,550 feet on upper ridges of Pine Mountain. Slopes range from zero (0) to 30 percent over most of the Cinder Hill and Coyote range allotments. Steeper slope gradients (25 to 60 percent) are common within the Pine Mountain Allotment.

Mean annual precipitation varies across the landscape due to changes in elevation, but it generally ranges from about 10 to 20 inches.

Ash and pumice deposits from Mount Mazama (Crater Lake) and Newberry Crater volcanoes have covered most of the planning area except for some of the youngest lava flows. Mazama ash varies from 12 to 40 inches thick and consists mostly of sand size particles that produce sandy loam soil textures.

The southern foot slopes of Pine Mountain have a thin layer of Newberry pumice deposits (less than 10 inches thick) that overlay the Mazama ash materials. Newberry pumice consists of coarse gravel size pumice, and soil surface layers typically have loamy sand textures.

The underlying bedrock is dominated by basalt and andesite lava with inclusions of volcanic tuffs and breccias.

Wind erosion has redistributed much of the volcanic ash on the slopes of Pine Mountain. It has sorted out different size materials and re-deposited them on the lee sides of some slopes and draws. This has resulted in localized areas of exposed bedrock and relatively thin layers of volcanic ash while other areas have deep deposits of sand sized materials that are easily displaced by ground-disturbing activities.

Dominant soils are moderately deep (20 to 40 inches) to deep (40 inches or more in depth) with surface and subsoil textures of sands, loamy sands, and sandy loams. These soils are well drained with rapid infiltration rates that drain excess moisture readily over much of the project area. Periods of wetness are generally discontinuous and of short duration.

The underlying residual soils and bedrock materials have a moderate to high capacity to store water. Surface runoff generally occurs only on localized areas of shallow and moderately deep soils during high intensity storms or when the ground is frozen.

There are no perennial streams, seeps, or springs within the project area. Existing drainage channels are predominately old ephemeral channels that flow only during high precipitation events.

The project area contains 46 Soil Resource Inventory (SRI) landtype units based on similarities in landforms, geology, and climatic conditions that influence defined patterns of soil and vegetation. The biophysical characteristics of these landtype units can be interpreted to identify hazards, suitabilities, and productivity potentials for natural resource planning and management.

Topography affects climate by creating a moisture gradient of lower precipitation

along the desert fringe that increases with elevation. Topography also affects climate where cold air drainages influence cooler soil temperatures that reflect differences in vegetation.

Two distinct types of soil parent materials, Mazama ash and Newberry pumice, also determine the types of soil found within this landscape.

Sensitive Soil Types

Criteria for identifying sensitive soils to management are listed in the (Deschutes Land and Resource Management Plan (LRMP), Appendix 14, Objective 5). They include:

- slopes over 30 percent,
- frost pockets,
- seasonal or year-long high water tables,
- extremely rocky areas, and
- soils that have high or extreme erosion hazard ratings.

Sensitive soils within the project area include:

- soils on slopes greater than 30 percent,
- soils that occur in localized areas of rocky lava flows, and
- soils with a high hazard rating for surface erosion.

There are no potentially wet soils with high water tables.

Operating plans needs to consider management practices that maintain adequate ground cover protection in areas with sensitive soils. Approximately 26 percent (22,836 acres) of National Forest System lands contain landtypes with sensitive soils in localized areas of mapped delineations (Soil Resource Inventory (SRI), Deschutes National Forest, 1976 as cited by the Soils Report, Table 3-8, page 9)). It should be emphasized that only portions of these total landtype acres contain sensitive soil areas.

SOIL PRODUCTIVITY ISSUE (CONCERN)

Livestock grazing and range management activities may adversely affect the ability of soils to maintain productivity through physical disturbances to soil properties and reductions in surface organic matter.

MANAGEMENT DIRECTION

The LRMP specifies that management activities are prescribed to promote maintenance or enhancement of soil productivity by leaving a minimum of 80 percent of an activity area, such as a grazing allotment pasture, in a condition of acceptable productivity potential following land management activities (LRMP page 4-70, SL-1 and SL-3). This is accomplished by following Forest-wide standards and guidelines to ensure that soils are managed to provide sustained yields of managed vegetation without impairment of the productivity of the land.

Standard and Guideline (SL-4) directs the use of rehabilitation measures when the cumulative impacts of management activities are expected to cause damage exceeding soil quality standards and guidelines on more than 20 percent of an activity area.

Standard and Guideline (SL-5) limits the use of mechanical equipment in sensitive soil areas.

Standard and Guideline (SL-6) provides ground cover objectives to minimize soil erosion by water and wind.

These Forest-wide standards and guidelines apply to the four management allocations in the project area (MA-7, MA-8, MA-9, and MA-15). The LRMP Management Area descriptions do not contain specific standards and guidelines for the soil resource.

The Pacific Northwest Region developed soil quality standards and guidelines that limit detrimental soil disturbances associated with management activities (FSM 2520, R-6 Supplement No. 2500-98-1 as cited in the Soils Report, page 10). A detrimental soil condition occurs when soil-hydrologic function and site productivity are adversely affected by ground disturbances that reduce the soils ability to supply

nutrients, moisture, and air that support soil microorganisms and the growth of vegetation. This Regional guidance supplements Forest Plan standards and guidelines that are designed to protect or maintain soil productivity. Detrimental soil impacts are those that meet the criteria described in the Soil Quality Standards listed below.

Detrimental Compaction in volcanic ash/pumice soils is an increase in soil bulk density of 20 percent, or more, over the undisturbed level.

Detrimental Puddling occurs when the depth of ruts or imprints is six inches or more.

Detrimental Displacement is the removal of more than 50 percent of the A horizon from an area greater than 100 square feet and which is at least 5 feet in width.

Severely Burned soils are considered to be detrimentally disturbed when the mineral soil surface has been significantly changed in color, oxidized to a reddish color, and the next one-half inch blackened from organic matter charring by heat conducted through the top layer.

TARGET LANDSCAPE CONDITION

The primary goal of soil management is to maintain or enhance soil conditions at acceptable levels without impairment of the productivity of the land. The extent of detrimental soil disturbances is minimized through the application of management requirements and conservation practices designed to meet soil resource objectives. The land effectively takes in and distributes water, and erosion rates are controlled to near-natural levels. The biological productivity of soils is ensured by management prescriptions that retain adequate supplies of surface organic matter and coarse woody debris.

SCOPE OF THE ANALYSIS

The soil resource may be directly, indirectly, and cumulatively affected on National Forest System lands within each of the three range allotments (Cinder Hill, Coyote, and Pine Mountain) that comprise the larger project area. An activity area is defined as "the total area of ground impacted activity, and is a feasible unit for sampling and evaluating" (FSM 2520 and Forest Plan, page 4-71). The discussion of soil effects and soil quality standards will be focused on the grazing areas within each of the range allotments. It will also discuss the transportation system and other management facilities necessary to achieve other multiple use objectives.

A qualitative assessment of soil effects within the allotments was conducted by comparing existing conditions to the anticipated conditions which would result from implementing the action alternatives. The best available information about the proposed actions was used in conjunction with the location of activities to analyze the potential effects on the soil resource.

Effects upon the soil resource include two primary sources of disturbance:

1) the effects of domestic animals as they graze, and
2) the effects of the structural improvements needed to manage livestock.

The analysis also considered differences between current and modified management plans to determine how they best meet soil resource objectives through proper timing and utilization of forage that maintains adequate ground cover protection of surface soils.

SUMMARY - EXISTING SOIL CONDITIONS

The current condition of soils is directly related to the quantity and quality of surface organic matter and soil porosity.

A combination of natural events and management-related disturbances have influenced existing soil conditions. Native vegetation has recovered in burned areas from past wildfire events. Existing sources of ground cover have returned surface erosion rates to near natural levels.

There is no evidence of natural or management-related landslides. There is low risk for the proposed actions to cause soil mass wasting.

Ground-disturbing management activities (timber harvest, road building, recreation use and livestock grazing) have caused some long-term impacts to site productivity. This is especially true where mechanical disturbances removed vegetative cover, displaced organic surface layers, compacted soils, and accelerated erosion rates above natural levels. Livestock have not caused substantial reductions in surface organic matter and coarse woody debris.

The primary sources of detrimental soil conditions and accelerated erosion are associated with existing roads and ground-based logging facilities used for timber management activities between 1968 and 2002. Activity areas for silvicultural and fuel treatments are the individual harvest units or fuel treatment areas. Therefore, the extent of soil impacts from these past activities occurred in smaller portions of the much larger range allotments which are considered to be the activity areas for this project. Most project-related impacts to soils occurred on and adjacent to heavy-use areas such as main skid trails and log landings. Surface soils were displaced and/or multiple equipment passes caused deep compaction on such sites. There is little evidence of severely burned soil from post-harvest fuel treatments. Most sites still contain sufficient supplies of coarse woody debris on the ground to recycle nutrients and maintain soil productivity. Some previously managed areas have detrimental soil conditions that exceed 20 percent of an activity area. This is particularly true in stands treated prior to the establishment of LRMP standards and guidelines in 1990. However, the overall extent of detrimental soil conditions is expected to be within allowable LRMP limits for maintaining soil productivity within each of the three range allotments.

Land uses that have committed the soil resource to a non-productive condition include OHV trails and facilities, roads, livestock water developments, and the Pine Mountain observatory and campground. Soils dedicated to management facilities typically have disturbed properties that remove land from production for as long as the facility remains in use. Surface erosion on these sites will continue to exceed the natural rates of undisturbed soils for as long as bare surface soils are exposed to the elements of erosion.

Soil disturbances from livestock grazing and recreational use are found mainly in small concentration areas. The real extent of these impacts are relatively minor in comparison to the transportation system and existing logging facilities.

The majority of detrimental soil conditions from livestock impacts are confined to relatively small areas (approximately one acre) around water developments. The total extent of disturbed soil committed to water sets is estimated to be less than 0.1 percent for each of the range allotments. There are no site-specific areas where livestock movement and grazing effects have caused unsatisfactory range conditions over continuous areas of grazing land. Upland sites are currently providing adequate surface cover to meet soil resource objectives.

The concentration of human activity in and around developed and dispersed recreation sites has caused soil resource damage in localized portions of the project area. The small extent of recreational impacts has a negligible effect on overall site productivity within the range allotments. Therefore, the overall amount of detrimental soil conditions is well within allowable LRMP limits for maintaining soil productivity. Campfires usually consume available sources of down woody debris.

The cumulative amount of detrimentally disturbed soil from past management activities is expected to be well within allowable LRMP limits for maintaining soil productivity within each of the three range allotments.

BACKGROUND INFORMATION

The current condition of soils is directly related to the quantity and quality of surface organic matter and soil porosity . A combination of natural events and management-related disturbances have influenced existing soil conditions. Natural disturbance patterns (precipitation events, droughts, insect and disease epidemics, and wildfires) continue to influence the growth of vegetation and natural erosion rates. Ground-disturbing management activities (timber harvest, road building, recreation use and livestock grazing) have caused some long-term impacts to site productivity. This is particularly the case where mechanical disturbances removed vegetative cover, displaced organic surface layers, compacted the soil, and accelerated erosion rates above natural levels. When soil degradation occurs in semiarid, high desert regions, natural processes are slow to return site productivity.

The biological productivity of soils relates to the amount of surface organic matter and coarse woody debris retained or removed from affected sites. Livestock have not caused substantial reductions in surface organic matter and coarse woody debris.

MASS MOVEMENTS AND MASS STABILITY HAZARDS

Mass movements, or landslides, occur when earthen materials become unstable and slide downslope in response to gravity. There are no natural or management-related landslides known to exist within the Cinder Hill project area. This is most likely due to the dominance of coarse textured soils that readily drain excess moisture from steep slopes.

The LRMP (page 4-70, SL-7) requires that alternative project proposals be developed and analyzed when a project could result in an increased potential for soil mass wasting. Construction activities have the greatest potential for causing management-related landslides on steep slopes. There is low risk for the proposed actions to cause landslides because there are no seeps or springs on steep slopes, and planned locations for structural developments (fences, cattle guards) do not meet criteria for landslide prone terrain.

WILDLAND FIRE

Wildfires can cause severe burning of the soil surface which may completely consume the protective ground cover and cause soils to repel water. This can result in increased surface runoff and subsequent erosion.

The type and amount of fuel is a major factor in determining burn severity and the potential for causing adverse effects to the soil resource. In general, grass fires produce lower soil temperatures with shorter durations than fires that consume thick brush or dense stands of trees. This reduces the potential for severely burned soils.

Fire history data indicates that large fires (greater than 100 acres) have burned portions of the project area within the past 50 years. The 1996 Evans West Fire (4,230 acres) burned vegetation on approximately 11 percent of the Cinder Hill Allotment. Much of the affected area was transitional range with forested vegetation. Tree seedlings were planted to re-establish forest conditions, and livestock are not expected to resume grazing until 2006.

The 1996 Skeleton Fire (17,789 acres) removed the forest canopy and much of the shrub component on approximately 7,078 acres of National Forest lands in the northeastern portion of the Coyote Allotment. Native grass species have recovered and existing sources of ground cover have returned surface erosion rates to near natural levels (Figure 20).

Figure 20 Post-Fire Native Vegetation Recovery, 1996 Skeleton Fire. 2002 Photograph, Coyote Allotment.

Forage production has actually increased due to nutrient releases in burned areas. There is little evidence of severely burned soil and accelerated erosion from past wildfires. Any localized evidence of severely burned soil would likely be confined to small areas where individual logs or stumps were completely consumed by fire.

The fire perimeter of the recent 18 Fire (July 2003) contains approximately 11 percent or 3,717 acres in portions of three pastures in the Coyote Allotment. Much of the affected area was transitional range with forested vegetation. This fire did not cause intense heating of the soil surface, and the extent of severely burned soil consisted of small localized areas (too small to map) in areas beneath downed logs or root crowns of individual trees. Much of the coarse woody debris was consumed on these sites.

Standing dead snags are an important source of future organic matter for nutrient cycling.

Areas that burned with low to moderate severity showed only partial consumption of pre-fire down logs and evidence of un-charred fine roots near the soil surface. The natural recovery of most ground-cover vegetation is expected to be rapid (within the first two growing seasons). Due the extent of moderate, light and unburned areas, intolerable erosion rates and long-term effects to soil productivity are not expected during the fire recovery period.

MANAGEMENT-RELATED DISTURBANCES

Soils dedicated to existing roads and ground-based logging facilities (log landings, main skid trails) are the primary sources of detrimental soil conditions and accelerated erosion within the project area. Other land uses with detrimental soil conditions include OHV trails and facilities, livestock water developments, and the Pine Mountain observatory and campground area. Soils dedicated to management facilities typically have disturbed properties that remove land from production for as long as the facility remains in use. Surface erosion on these sites will continue to exceed the natural rates of undisturbed soils for as long as bare surface soils are exposed to the elements of erosion.

Timber Management

Between 1968 and 2002, ground-based logging equipment disturbed soils in portions of approximately 29,845 harvest unit acres within the Cinder Hill project area.

Research and operational experience suggest that approximately 20 percent of the harvest unit acres are detrimentally disturbed by skid trails, roads, and landings. This assumes a skid trail spacing of 50 feet and an average disturbed width of 12 feet (Soils Report, page 15).

The Deschutes National Forest averages one (1) landing for every 10 acres of harvest with an average size of approximately 10,000 square feet (approximately one quarter acre). This is approximately two (2) percent of the harvest area. The total estimated detrimentally disturbed soil area associated with past timber harvest activity is approximately 22 percent. This figure is conservative; average distances between skid trails have increased to 100 feet or more since implementation of the LRMP (Soils Report, page 15).

Table 12 shows the distribution of disturbed soils associated with timber harvest activity and the percentage of the each allotment considered to be disturbed.

Table 12 Acres of Detrimentally Disturbed Soils Associated with Timber Harvest Activity, 1968 - 2002, by Allotment.

	Allotment		
	Coyote	Cinder Hill	Pine Mtn
Total Allotment Acres	35,167	37,130	17,023
Harvest Unit Acres	16,667	12,006	1,172
Est. Detrimentally Disturbed Acres*	3,667	2,641	258

Percent of Allotment with Detrimentally Disturbed Soils	**10**	**7**	**2**

***Detrimentally disturbed acres are estimated to be 22 percent of the harvest unit acres.**

Temporary roads, log landings, and primary skid trails were used to access activity areas for various silvicultural and fuel treatments. The extent of detrimentally disturbed soil is dependent on a number of variables including existing impacts from previous entries, types of silvicultural prescriptions, the spacing distances between main skid trails, the ability to re-use previously established logging facilities, and types of post-harvest fuel treatments.

Most project-related impacts that caused detrimental soil conditions occurred on and adjacent to heavy-use areas (main skid trails, log landings) where surface soils were displaced and/or multiple equipment passes caused deep compaction. Although existing logging facilities are re-used whenever possible, soil productivity monitoring on the forest has shown that detrimental soil conditions increase each time a stand is treated with ground-based equipment.

Localized areas of severely burned soil likely exist where intense heat was concentrated under slash piles, but the extent of these detrimental conditions is relatively minor compared to the area impacted by logging facilities.

Most treated sites still contain sufficient supplies of coarse woody debris on the ground to recycle nutrients and maintain soil productivity.

Various silvicultural treatments have occurred within the project area prior to the establishment of the LRMP in 1990. Some previously managed areas currently have detrimental soil conditions that exceed 20 percent of an activity area. This is particularly true in stands that were treated prior to the establishment of LRMP standards and guidelines in 1990.

In order to protect or maintain soil conditions at acceptable levels, reclamation treatments are often applied on unneeded roads and logging facilities to reduce the cumulative amounts of detrimental soil conditions within activity areas. In the past decade, soil tillage treatments (subsoiling) has been used on the forest to reduce the amount of compacted soil and improve the hydrologic function and productivity on disturbed sites. This type of mitigation is currently planned for all reasonably foreseeable timber management activities within the Cinder Hill project area.

Activity areas for silvicultural and fuel treatments are the individual harvest units or fuel treatment areas. The extent of soil impacts from these past activities occurred in smaller portions of the much larger range allotments that are considered to be the activity areas for this project.

Much of the random disturbance between main skid trails and away from landings has decreased naturally over time. Research has shown that the detrimental effects of soil compaction generally require more than 3 to 5 equipment passes over the same piece of ground (McNabb, Froehlich, 1983 as cited in the Soils Report, page 16). Where logs were skidded with only 1 or 2 equipment passes, soil compaction is shallow (2 to 4 inches) and the bulk density increases do not qualify as a detrimental soil condition. It is expected that soils in these areas have returned to undisturbed density levels in the short-term (less than 5 years) through natural processes (i.e., root penetration, frost heave, rodent activity, freeze-thaw and wetting drying cycles).

Therefore, the overall extent of detrimental soil conditions within each of the three range allotments is expected to be within allowable LRMP limits for maintaining soil productivity.

Recreational Activities

Current recreational activities include developed and dispersed camping, hiking, mountain biking, horseback riding, and off-highway vehicle (OHV) use. The concentration of human activity in and

around recreation sites can reduce vegetative cover, compact the soil surface, and accelerate erosion. Campfires usually consume available sources of down woody debris around recreation sites. The Forest Service conducts annual maintenance of developed recreation sites to prevent serious erosion problems and impacts to other resource values. No such activities are performed on dispersed sites.

Impacts from dispersed recreation activities are usually found along existing roads and trails. Water developments (water sets) that are no longer needed for future range management often become dispersed campsites because they are on relatively level ground and shrubs and other vegetation have already been cleared. Heavy use of popular dispersed recreation sites typically show substantial resource damage given a combination of overuse, improper camping techniques and insufficient control and maintenance.

Intensive recreation use has resulted in soil resource damage in small localized areas. The extent of these disturbances are relatively minor in comparison to disturbed areas from the transportation system and logging facilities. Therefore, the minor amount of detrimental soil conditions from recreational activities is within allowable LRMP limits for maintaining soil productivity and has a negligible effect on overall site productivity within the range allotments.

Livestock Grazing

The effects of grazing domestic animals are not evenly distributed across the landscape. The random effects of compaction, soil displacement, and loss of vegetative cover are difficult to identify in site-specific locations. Topography and the quantity and quality of available forage have a strong influence on the amount of grazing use within a range allotment. Livestock tend to focus more on certain areas and to minimize or exclude use in other areas. Forested areas are generally considered transitional range where grazing use is substantially less than primary rangeland that supports grasses and shrubs.

Livestock impacts to the soil resource are found mainly in localized areas of concentrated use - water developments, salt licks, bedding areas, and major travel routes. Within the Cinder Hill planning area, the majority of detrimental soil conditions are confined to relatively small areas around water developments needed to manage livestock. Salt licks are commonly placed in the immediate vicinity of water sets. These sites are commonly used as bedding areas, especially where scattered trees exist to provide shade. The compacted area around a typical water set is estimated to be approximately one acre (Range Report, page 20). There are 70 water sets totaling approximately 70 acres of the soil committed to this land use. Distribution by range allotment is as follows:

- 37 water sets (37 acres) in Cinder Hill;
- 21 water sets (21 acres) in Coyote; and
- 12 water sets (12 acres) in Pine Mountain.

The extent of detrimental soil conditions from these management facilities is less than 0.1 percent for each of the three range allotments. This amount is well within allowable limits set by LRMP standards and guidelines for maintaining soil productivity.

The direct effects of soil displacement, compaction, and loss of vegetative cover on livestock trails can create bare soil areas which are susceptible to accelerated surface erosion. Livestock grazing has not caused widespread impacts to soils within the planning area. Current range records for representative analysis plots indicate that forage conditions are generally good, and the vegetative trend is stable. There are no site-specific areas where livestock movement and grazing effects have caused unsatisfactory range conditions over continuous areas of grazing land. Surface erosion by water or wind is not a major concern because the landscape is dominated by gentle to moderately steep landtypes with low to moderate erosion hazard ratings (Soils Report, Tables 3-5 to 3-7, pages 5-7). Upland range sites are currently providing adequate ground cover protection to meet soil resource objectives.

Effective ground cover includes all living or dead herbaceous or woody materials and rock fragments greater than three-fourths of an inch in diameter in contact with the ground surface, including tree or shrub seedlings, grass, forbs, litter, and woody biomass (LRMP, page 4-71). Figure 21 shows effective ground-cover protection on moderately steep slopes of Pine Mountain, where topography has influenced light grazing use.

Figure 21 Abundant Surface Organic Matter, Pine Mountain Allotment, 2002. Surface organic matter reduces raindrop impacts and the potential for surface erosion on steep slopes with sensitive soils.

Microbiotic crusts (algae, fungi, lichens, and moss) grow directly on the soil surface and provide some stabilization on loose, non-cohesive soils. These fragile crusts are found mainly in small protected areas beneath shrubs.

Treading by livestock can cause soil puddling and compaction damage. This decreases water infiltration and increases the potential for surface runoff and accelerated erosion. Soil puddling is not a major concern because this type of disturbance occurs during saturated soil conditions. Soils are well drained and there are no riparian areas associated with streams, seeps or springs within the project area. Small localized areas around water developments may show some evidence of hoof imprints but soil puddling is most likely to be observed as rutting caused by vehicles or equipment during wet conditions.

Soil compaction caused by livestock trailing does not appear to curtail the growth of grasses and other forage plants the way it does in frequently used areas, such as around water sets. Research has shown that soil compaction by livestock is most severe in the upper 2 inches of mineral soil, but it can extend as deep as 12 inches (Council for Agricultural Science and Technology, 2002). The direct effects of shallow compaction (2 to 4 inches) from grazing animals are expected to recover through natural means (i.e., frost heave, freeze-thaw, and wet-dry cycles) in a much shorter timeframe than deep compaction damage caused by equipment traffic.

Livestock generally do not travel straight up and down the steeper landforms. It is unlikely that there are well-used trails with down-slope depressions that can intercept runoff water and cause rill or gully erosion.

The trailing effects of livestock movement have not caused soil impacts over extensive areas of the range allotments. The minor amount that would actually qualify as a detrimental condition is expected to be well within allowable LRMP limits for maintaining soil productivity.

ENVIRONMENTAL EFFECTS

EFFECTS COMMON TO ALL ALTERNATIVES

Issue 1: Vegetative conditions outside of the range of natural variability resulting in higher fuel loadings and larger, more intense wildfires.

This issue may affect the soil resource.

There is little evidence of severe soil resource damage from past wildfire events (Soils Report, page 27). Continued wildfire suppression would continue the buildup of fuels and increasing the risk of detrimental impacts to soils such as loss of nutrients and productivity.

Issue 2: Reducing or eliminating grazing from public lands.

This issue would have little or no measurable effect on the soil resource.

Detrimental soil impacts associated with grazing are primarily associated with water sets. There are currently 70 water sets on the three allotments totaling less than 0.1 percent of the project area.

Livestock compact soils. Such impacts are random and difficult to identify or quantify on a site-specific basis. The greatest impacts are around water developments and where livestock trail along fences.

Livestock can compact soils to depths up to 12 inches but the greatest impacts occur within the first two (2) inches. Shallow compaction, up to four (4) inches in depth, would be expected to recover through natural processes - frost heaving, freeze-thaw cycles, and wet/dry cycles – rather quickly, perhaps by the start of the following grazing season (Soils Report, page 18).

Elimination or reducing grazing would also have little or no measurable impact on the soil resource. Short-term compaction associated with livestock movement would be eliminated possibly by the following year through natural processes as described above. Recovery of detrimentally disturbed sites, predominately water sets, would result in an increase in productive acres by less than 0.1 percent (approximately 70 acres) across the project area.

Issue 3, Conflicts between grazing and wildlife; and

Issue 4: Increasing risk of accidents and conflicts between grazing operations and other forest users.

These issues have no measurable effects on the soil resource.

ALTERNATIVE 1 – CURRENT MANAGEMENT

DIRECT AND INDIRECT EFFECTS

Stocking levels and the types and number of structural improvements would remain the same. Livestock allocations in the Cinder Hill and Pine Mountain allotments would remain less than the stocking potential for available forage. The locations of new soil disturbance may vary, but the nature of livestock grazing effects would not change the overall soil conditions in these allotments. The Coyote Allotment would remain vacant, and soil conditions on disturbed sites would recover naturally over time. However, fence lines and other structural improvements would continue to deteriorate on the Coyote Allotment. Soil productivity would not change appreciably unless catastrophic wildfires consume surface organic matter and accelerate erosion in forested, transitional range areas of these allotments.

On the Cinder Hill and Pine Mountain allotments, the direct and indirect effects to the soil resource would be essentially the same as those previously described for existing conditions. Livestock impacts to soils would be confined to relatively small concentration areas such as around water developments. The extent of detrimental soil conditions would remain within allowable LRMP limits for maintaining soil productivity. Field visits to the project area identified little or no evidence of degraded range conditions and bare surface soils on upland sites of these allotments. Forage resources would continue to be managed for long-term sustained productivity through attainment of upward or stable vegetative trends (LRMP, page 4-49). Current range records indicate that forage conditions are generally good with a vegetative trend that is stable. This alternative would be expected to achieve similar results that meet soil resource objectives.

CUMULATIVE EFFECTS

The combined effects of current disturbances and the proposed management of this alternative were previously addressed in the direct and indirect effects section above. Future management activities are assumed to occur as planned in the schedule of projects for the Deschutes National Forest. Foreseeable actions include silvicultural and fuel reduction treatments, continued recreation use, standard road maintenance, and prescribed maintenance burning to

further reduce fuel densities and the risk for intense wild land fires.

The cumulative amount of detrimentally disturbed soil from range structural improvements and all other management facilities would remain well within the allowable LRMP limit for maintaining soil productivity. Appropriate stocking levels, rotation of grazing use, and periodic rest of pastures would ensure adequate ground cover that effectively minimizes erosion and adverse effects to soils in all three allotments. The current vegetative trend is stable, and the proposed management would be expected to achieve similar results. Forage resources would be managed to comply with all applicable LRMP standards and guidelines. Proper implementation of these management requirements would maintain acceptable soil productivity within each of the range allotments.

The majority of detrimental soil conditions are associated with existing roads and ground-based logging facilities in heavy use areas such as main skid trails and log landings. Some previously managed areas currently have detrimental soil conditions that exceed 20 percent of an individual harvest unit or fuel treatment area. This is particularly true in stands that were treated prior to the establishment of LRMP standards and guidelines in 1990. These are estimated at 3,667 acres (10 percent) of the Coyote Allotment; 2,641 acres (7 percent) of the Cinder Hill Allotment; and 258 acres (2 percent) of the Pine Mountain Allotment (Table 11 page 3-95).

Similar silvicultural and fuel reduction treatments are currently being planned for the Opine and Kelsey project areas and being implemented within the Fuzzy project area. All overlap portions of the Cinder Hill project area. Assuming an average skid trail spacing of 100 feet, approximately 11 percent of the harvested acres would experience detrimental soil damage.

The LRMP (page 4-70, SL-4) directs the use of rehabilitation measures when the cumulative impacts of management activities are expected to cause detrimental soil conditions that exceed more than 20 percent of an activity area. In the past decade, reclamation treatments (subsoiling) has been used on unneeded roads and logging facilities to reduce the amount of compacted soil and improve soil conditions. This type of mitigation is included in project plans for all current and reasonably forseeable project activities. The extent of soil impacts from past activities occurred in smaller portions of the much larger range allotments which are considered to be the activity areas for this project.

The cumulative amount of detrimentally disturbed soil within each of the three allotments would be within allowable LRMP limits for maintaining soil productivity.

The effects of other natural events and management-related soil disturbances are relatively minor in comparison to soil impacts associated with the transportation system and existing logging facilities. Human impacts to the soil from recreational activities would likely continue to be confined to relatively small sites. Future recreation use is not expected to add appreciable amounts of soil damage above existing levels.

Road maintenance activities would reduce accelerated erosion rates where improvements are necessary to correct road drainage problems.

The installation of new cattleguards associated with designated OHV trail systems proposed by the Kelsey and Opine Access Management EAs would have a no effect on overall site productivity. Installation of 11 new OHV cattleguards would occupy less than 600 square feet (approximately 50 square feet per cattleguard) or approximately 0.01acre across the entire project area.

There is little evidence of severely burned soil from past wildfire events or prescribed burn treatments. Future prescribed burn treatments would achieved under controlled conditions. It would not be anticipated that

low-to-moderate intensity burns would result in detrimental changes to soil quality. There are no soil related concerns associated with the combined effects of these future activities.

In the short term, the amount of surface organic matter and coarse woody debris would remain the same or gradually increase. In the long term, fuel accumulations would increase the risk for intense wild land fires on these grazing lands. The forested, transitional range sites would be the most vulnerable due to the type and amount of fuels. Severely burned soils and accelerated erosion would most likely occur where fire consumes thick brush or dense stands of trees. There is low risk of soil mass failures (landslides) due to the stability of representive landtypes within these allotments.

The overall effects of the proposed management for this alternative combined with all past, present, and foreseeable management activities would be within allowable limits set by LRMP standards and guidelines for maintaining soil productivity.

ALTERNATIVE 2 – PROPOSED ACTION

DIRECT AND INDIRECT EFFECTS

The direct and indirect effects to the soil resource would be similar to those described for Alternative 1 - Current Management. The primary difference is livestock grazing would resume in the western portion of the original Coyote allotment. Locations of new soil disturbance would vary due to changes in allotment boundaries, the number of pastures and structural improvements. Livestock impacts would not be widespread and they would not be expected to change the overall soil conditions. Implementation of mitigation measures to meet wildlife and cultural resource objectives would have no effect on the soil resource. Soil productivity would not change appreciably unless catastrophic wildfires consume surface organic matter and accelerate erosion in forested, transitional range areas.

Most detrimental soil conditions from range management activities are associated with the structural improvements needed to facilitate the distribution of livestock. Soils dedicated to management facilities, such as water developments, the transportation system and cattleguards, are considered an irretrievable loss of soil productivity until their functions have been served and disturbed sites are returned back to a productive capacity.

Under this alternative, the subsequent changes in the number of water sets and cattleguards would have a neglible effect on the overall amount of soil committed to these facilities. The installation of new cattleguards would likely disturb a minor amount of soil adjacent to existing road beds or OHV trails where soils have already been impacted by their construction and use. Eleven (11) new OHV cattleguards required to provide access through existing or proposed fences would occupy approximately 0.01 acres across the entire project area. Four (4) road cattleguards, including three (3) new ones and one (1) being relocated would occupy a similar area, all of which is within the currently disturbed portion of the road right-of-way.

There are 70 existing water sets in the project area. Nine (9) are proposed for removal; seven (7) new ones would be added leaving a total of 68. Assuming an average of one (1) acre of detrimentally impacted soils per water set, there would be a reduction from 70 to 68 acres of determentally impacted soils associated with water sets across the project area.

There would be no mechanical disturbance or extraordinary circumstances associated with sensitive soil areas. The reclamation of unneeded water sets would improve soil conditions around these sites, but soil tillage (subsoiling) treatments would be ineffective if access roads are retained and these areas become dispersed recreation sites.

Fence lines have local, site-specific effects on soils, but they are not considered structures that convert the soil to a non-productive condition. Therefore, this

alternative would have no effect on the extent of soil impacts from necessary structural improvements. The cumulative amount of detrimentally disturbed soil from all management facilities would be well within the allowable LRMP limit for maintaining soil productivity.

Fence construction and/or reconstruction activities are not expected to detrimentally disturb the soil. Mowing would be required to install new fence lines, but increases in soil compaction from the effects of mowing activities have been shown to be inconsequential (1997 Soil Monitoring Report as cited by the Soils Report, page 22). There would be no mechanical disturbance on steep slopes (over 30 percent) or other sensitive soil areas.

Appropriate stocking levels, rotation of grazing use, and periodic rest of pastures would ensure adequate ground cover protection in all three allotments. The combination of living and dead herbaceous or woody materials and surface rock fragments would effectively minimize the potential for surface erosion by water or wind.

The direct and indirect effects of livestock movement and grazing would not be expected to create unsatisfactory range conditions over extensive areas of these allotments. The effects of shallow compaction caused by livestock treading does not inhibit the growth of grasses and other forage plants because it generally recovers through natural means (frost heave, freeze-thaw and wet-dry cycles).

Forage resources would be managed for long-term sustained productivity through attainment of upward or stable vegetative trends (LRMP, page 4-49). Current range records indicate that forage conditions are generally good with a vegetative trend that is stable. The proposed management for this alternative would be expected to achieve similar results because livestock would be moved when average utilization reaches a maximum level of 50 percent utilization (LRMP, RG-13-D). Proper implementation of these management requirements would maintain acceptable soil productivity within each of the allotments.

Sheep and goats would be used to help manage fuels along the urban interface in the Coyote Allotment. This would extend the time period between fuel treatment activities and minimize the risk for intense wildfires and adverse effects to the soil resource. The ground pressure exerted by sheep and goats is less than one-half of that produced by cattle and horses (Intermountain Region, Soil Interpretative Guide, 1995 as cited by the Soils Report, page 22).

SOIL RESTORATION OPPORTUNITIES

Soils dedicated to water sets are considered an irretrievable loss of soil productivity until their functions have been served and disturbed sites are returned back to a productivie capacity. Changes in allotment boundaries and the number of pastures have a direct influence on the number and location of water sets that would be needed to facilitate livestock distribution. Where existing water set locations are no longer needed to meet management needs, options for rehabilitating disturbed sites include soil tillage (subsoiling) treatments to loosen compacted soils or allowing natural processes to reestablish native vegetation.

Although restoration treatments are not required mitigation for this project, these activities would stabilize detrimentally disturbed soils and reduce the risk of accelerated erosion much more rapidly than waiting on natural processes. When soil degradation occurs in semiarid, high desert regions, natural processes are slow to return site productivity (USDI, Southeastern Oregon Resource Management Plan, 2001 as cited in the Soils Report, page 25).

Where reclamation treatments are the preferred option on these disturbed sites, plans should include the use of soil tillage around the abandoned water set location, and seeding and/or mulching to achieve a minimum of 20 to 30 percent ground cover within the first year following treatment (LRMP SL-6, page 4-70 and 4-71).

CUMULATIVE EFFECTS

The combined effects of current disturbances and the proposed management under this alternative were previously addressed for direct and indirect effects. Future management activities are assumed to occur as planned in the schedule of projects for the Deschutes National Forest. Foreseeable actions include silvicultural and fuel reduction treatments, continued recreation use, standard road maintenance, and prescribed maintenance burning to further reduce fuel densities and the risk for intense wild land fires.

Under this alternative, the cumulative amount of detrimentally disturbed soil from range structural improvements and all other management facilities would remain well within the allowable LRMP limit for maintaining soil productivity. Appropriate stocking levels, rotation of grazing use, and periodic rest of pastures would ensure adequate ground cover that effectively minimizes erosion and adverse effects to soils in all three range allotments. The current vegetative trend is stable. The proposed management would be expected to achieve similar results because forage resources would be managed to comply with all applicable LRMP standards and guidelines. Proper implementation of these management requirements would maintain acceptable soil productivity within each of the range allotments.

The majority of detrimental soil conditions are associated with existing roads and ground-based logging facilities in heavy use areas such as main skid trails and log landings. Assuming an average skid trail spacing of 100 feet, approximately 11 percent of the harvested acres would experience detrimental soil damage. An additional two (2) percent would be associated with landings.

Some previously managed areas currently have detrimental soil conditions that exceed 20 percent of an individual harvest unit or fuel treatment area. This is particularly true in stands that were treated prior to the establishment of LRMP standards and guidelines in 1990. These are estimated at 3,667 acres (10 percent) of the Coyote Allotment; 2,641 acres (7 percent) of the Cinder Hill Allotment; and 258 acres (2 percent) of the Pine Mountain Allotment (Table 11).

Similar silvicultural and fuel reduction treatments are currently being planned for the Opine and Kelsey project areas and being implemented in the Fuzzy project area. All overlap portions of the Cinder Hill project area. The LRMP (page 4-70, SL-4) directs the use of rehabilitation measures when the cumulative impacts of management activities are expected to cause detrimental soil conditions that exceed more than 20 percent of an activity area.

In the past decade, reclamation treatments (subsoiling) has been used on unneeded roads and logging facilities to reduce the amount of compacted soil and improve soil conditions. This type of mitigation is included in project plans for all current and reasonably forseeable project activities. The extent of soil impacts from past activities occurred in smaller portions of the much larger range allotments which are considered to be the activity areas for this project. Therefore, the cumulative amount of detrimentally disturbed soil within each of the three allotments would be within allowable LRMP limits for maintaining soil productivity.

The effects of other natural events and management-related soil disturbances are relatively minor in comparison to soil impacts associated with the transportation system and existing logging facilities. Human impacts to the soil from recreational activities would likely continue to be confined to relatively small sites. Future recreation use is not expected to add appreciable amounts of soil damage above existing levels.

Road maintenance activities would reduce accelerated erosion rates where improvements are necessary to correct road drainage problems.

The installation of new cattleguards associated with designated OHV trail systems proposed by the Kelsey and Opine Access Management EAs would have a no effect on overall site productivity. Installation of 22 new OHV cattleguards would occupy less than 500 square feet or approximately 0.01 acre across the entire project area.

There is little evidence of severely burned soil from past wildfire events or prescribed burn treatments. Future prescribed burn treatments would achieved under controlled conditions. It would not be anticipated that low-to-moderate intensity burns would result in detrimental changes to soil quality. There are no soil related concerns associated with the combined effects of these future activities.

In the short term, the amount of surface organic matter and coarse woody debris would remain the same or gradually increase. In the long term, fuel accumulations would increase the risk for intense wild land fires on these grazing lands. The forested, transitional range sites would be the most vulnerable due to the type and amount of fuels. Severely burned soils and accelerated erosion would most likely occur where fire consumes thick brush or dense stands of trees. There is low risk of soil mass failures (landslides) due to the stability of representive landtypes within these allotments.

The overall effects of the proposed management for this alternative combined with all past, present, and foreseeable management activities would be within allowable limits set by LRMP standards and guidelines for maintaining soil productivity.

ALTERNATIVE 3 – NO GRAZING

DIRECT AND INDIRECT EFFECTS

Detrimental soil conditions from range management activities would not increase because no additional land would be removed from production to build structural improvements within the existing allotments. It is unlikely that reclamation treatments (i.e., soil tillage practices) would be accomplished around unneeded water sets and some of these sites would likely become dispersed campsites due to existing access roads. Therefore, the effects of deep, detrimental compaction and accelerated soil erosion would remain unchanged for an extended period of time.

On upland sites not associated with livestock concentration areas, the localized effects of soil displacement, loss of vegetative cover, and shallow compaction from livestock treading would be expected to recover through natural processes over time. Surface erosion would decrease as vegetation becomes established on disturbed sites.

In the short term, the amount of surface organic matter and coarse woody debris would gradually increase or remain the same. In the long term, fuel accumulations would increase the risk for intense wild land fires and adverse effects to soil productivity. The forested, transitional range sites would be the most vulnerable due to the type and amount of fuels. Severely burned soils would most likely occur where fire consumes thick brush or dense stands of trees. Surface soils and their nutrient reserves could be lost through accelerated erosion rates as a result of lost surface cover and reduced infiltration rates on water repellent soils. There is low risk of soil mass failures (landslides) due to the stability of representative landtypes and absence of wet soils on steep slopes.

SOIL RESTORATION OPPORTUNITIES

Soils dedicated to water sets are considered an irretrievable loss of soil productivity until their functions have been served and disturbed sites are returned back to a productivie capacity. Changes in allotment boundaries and the number of pastures have a direct influence on the number and location of water sets that would be needed to facilitate livestock distribution. Where existing water set locations are no longer needed to meet management needs, options for rehabilitating disturbed sites include soil tillage (subsoiling) treatments to loosen compacted soils or allowing natural processes to reestablish native vegetation.

Although restoration treatments are not required mitigation for this project, these activities would stabilize detrimentally disturbed soils and reduce the risk of accelerated erosion much more rapidly than waiting on natural processes. When soil degradation occurs in semiarid, high desert regions, natural processes are slow to return site productivity (USDI, Southeastern Oregon Resource Management Plan, 2001 as cited in the Soils Report, page 25).

Where reclamation treatments are the preferred option on these disturbed sites, plans should include the use of soil tillage around the abandoned water set location, and seeding and/or mulching to achieve a minimum of 20 to 30 percent ground cover within the first year following treatment (LRMP SL-6, page 4-70 and 4-71).

CUMULATIVE EFFECTS

This alternative would terminate the allotment management plans and future livestock grazing would be discontinued on all three allotments. Past soil disturbances from natural events and management activities were previously described for existing soil conditions in the existing conditions section. The direct and indirect effects of no livestock grazing were previously addressed above. Future management activities are assumed to occur as planned in the schedule of projects for the Deschutes National Forest. Foreseeable actions include silvicultural and fuel reduction treatments, continued recreation use, standard road maintenance, and prescribed maintenance burning to further reduce fuel densities and the risk for intense wild land fires.

Under this alternative, detrimental soil conditions from range management activities would not increase because no additional land would be removed from production to build structural improvements. Existing improvements would be removed from the allotments.

Disturbed soils around existing water sets would be reclaimed by soil tillage (subsoiling) treatments or through natural processes over a longer period of time.

Subsoiling treatments would provide immediate benefits by loosening compacted soils and improving infiltration rates to reduce surface runoff and erosion.

The localized effects of livestock treading, away from water set locations, would be expected to recover naturally in the short term. There are no site-specific areas where livestock movement and grazing effects have caused unsatisfactory range conditions. Upland range sites are currently providing adequate sources of surface cover that meet soil resource objectives. Livestock have not removed existing sources of coarse woody debris.

Soil productivity has been reduced in some previously managed areas where ground-based equipment was used to harvest timber and/or reduce fuel loads. Most project-related impacts occurred on and adjacent to heavy-use areas, such as main skid trails and log landings. These are estimated at 3,667 acres (10 percent) of the Coyote Allotment; 2,641 acres (7 percent) of the Cinder Hill Allotment; and 258 acres (2 percent) of the Pine Mountain Allotment.

Similar silvicultural and fuel reduction treatments are currently being planned for the Opine and Kelsey project areas and being implemented in the Fuzzy project area. All overlap portions of the Cinder Hill project area.

Where cumulative impacts of management activities are expected to cause detrimental soil conditions that exceed more than 20 percent of an activity area (individual harvest unit or fuel treatment area), reclamation treatments would be used on unneeded roads and logging facilities to reduce the amount of compacted soil and improve soil conditions. Assuming an average skid trail spacing of 100 feet, approximately 11 percent of the harvested acres would experience detrimental soil damage. An additional two (2) percent would be associated with landings. The extent of soil impacts from past activities

occurred in smaller portions of the much larger range allotments which are considered to be the activity areas for this project. These are currently estimated to be 3,667 acres (10 percent) of the Coyote Allotment; 2,641 acres (7 percent) of the Cinder Hill Allotment; and 258 acres (2 percent) of the Pine Mountain Allotment (Table 11).

The cumulative amount of detrimentally disturbed soil within each of the three allotments would be within allowable LRMP limits for maintaining soil productivity.

The effects of other natural events and management-related soil disturbances are relatively minor in comparison to soil impacts associated with the transportation system and existing logging facilities. Human impacts from recreational activities would likely continue to be confined to relatively small sites that would have a no measurable effect on overall site productivity within the range allotments. These sites are already disturbed and would be expected to experience little additional impact from recreational use.

Road maintenance activities would reduce accelerated erosion rates where improvements are necessary to correct road drainage problems.

There is little evidence of severely burned soil within the allotments. Future burn treatments would be achieved through planned ignitions of low-to-moderate burn intensities that generally do not cause detrimental changes in soil properties. Low-intensity fire also helps ensure adequate retention of coarse woody debris for nutrient recycling.

There are no major-soil related concerns associated with the combined effects of these future activities.

Erosion rates would not change appreciably unless intense wild land fires occur on these lands. The forested, transitional range sites would be the most vulnerable due to the type and amount of fuels. In the event of a catastrophic fire, surface soils and their nutrient reserves could be lost through accelerated erosion. There is low risk of soil mass failures (landslides) within these allotments due to the stability of representative landtypes and absence of wet soils on steep slopes.

The overall effects of no livestock grazing within the three allotments combined with all past, present, and foreseeable management activities would be within allowable limits set by LRMP standards and guidelines for maintaining soil productivity.

ALTERNATIVE 4 – GRADUAL GRAZING REDUCTION

DIRECT AND INDIRECT EFFECTS

Under this alternative, the direct and indirect effects to the soil resource would be essentially the same as those described for Alternative 2 in the Cinder Hill and Pine Mountain Allotments. The primary difference between the proposed action and this alternative is livestock grazing would be discontinued in the western portion of the original Coyote Allotment (about 24,457 acres) and the allotment would be terminated. Within this portion of the Coyote Allotment, the localized effects of would recover naturally as vegetation becomes established on disturbed soils. Sheep and goats would not be permitted to help manage fuel accumulations, so the risk for wild land fires would gradually increase along the urban interface of the Coyote Allotment.

Within the new boundaries of the Cinder Hill and Pine Mountain Allotments, most detrimental soil conditions would be associated with structural improvements and other management facilities such as the transportation system. Fence lines would not convert the soil to a non-productive condition. Mowing activities would not be expected to detrimentally disturb the soil. There would be no mechanical disturbance on steep slopes (over 30 percent) or other sensitive soil areas. The cumulative amount of detrimentally disturbed soil from management facilities would be well within the allowable Forest Plan limit for maintaining soil productivity.

Implementation of mitigation measures to meet wildlife and cultural resource objectives would have no effect on the soil resource.

Appropriate stocking levels, rotation of grazing use, and periodic rest of pastures would ensure adequate ground cover protection in the Cinder Hill and Pine Mountain Allotments. These herbaceous and woody plant materials, combined with litter and surface rock fragments, would effectively minimize the potential for surface erosion by water or wind.

The direct and indirect effects of livestock movement and grazing would not be expected to create unsatisfactory range conditions over extensive areas of these allotments.

Forage resources would be managed for long-term sustained productivity. Livestock would be moved when average utilization reaches a maximum level of 50 percent utilization (LRMP standard and guideline RG-13-D). The proposed management for this alternative is expected to maintain a stable vegetative trend and acceptable soil productivity within each of the allotments.

Erosion rates would not change appreciably unless intense wild land fires occur on these lands. The forested, transitional range sites would be the most vulnerable due to the type and amount of fuels. In the event of a catastrophic fire, surface soils and their nutrient reserves could be lost through accelerated erosion. There is low risk of soil mass failures (landslides) within these allotments due to the stability of representative landtypes and absence of wet soils on steep slopes.

SOIL RESTORATION OPPORTUNITIES

Soils dedicated to water sets are considered an irretrievable loss of soil productivity until their functions have been served and disturbed sites are returned back to a productivie capacity. Changes in allotment boundaries and the number of pastures have a direct influence on the number and location of water sets that would be needed to facilitate livestock distribution. Where existing water set locations are no longer needed to meet management needs, options for rehabilitating disturbed sites include soil tillage (subsoiling) treatments to loosen compacted soils or allowing natural processes to reestablish native vegetation.

Although restoration treatments are not required mitigation for this project, these activities would stabilize detrimentally disturbed soils and reduce the risk of accelerated erosion much more rapidly than waiting on natural processes. When soil degradation occurs in semiarid, high desert regions, natural processes are slow to return site productivity (USDI, Southeastern Oregon Resource Management Plan, 2001 as cited in the Soils Report, page 25).

Where reclamation treatments are the preferred option on these disturbed sites, plans should include the use of soil tillage around the abandoned water set location, and seeding and/or mulching to achieve a minimum of 20 to 30 percent ground cover within the first year following treatment (LRMP SL-6, page 4-70 and 4-71).

CUMULATIVE EFFECTS

The combined effects of current disturbances and the proposed management under this alternative were previously addressed for direct and indirect effects. Future management activities are assumed to occur as planned in the schedule of projects for the Deschutes National Forest. Foreseeable actions include silvicultural and fuel reduction treatments, continued recreation use, standard road maintenance, and prescribed maintenance burning to further reduce fuel densities and the risk for intense wild land fires.

Under this alternative, the cumulative amount of detrimentally disturbed soil from range structural improvements and all other management facilities would remain well within the allowable LRMP limit for maintaining soil productivity. Appropriate stocking levels, rotation of grazing use, and periodic rest of pastures would ensure

adequate ground cover that effectively minimizes erosion and adverse effects to soils in all three range allotments. The current vegetative trend is stable. Proposed management would be expected to achieve similar results because forage resources would be managed to comply with all applicable LRMP standards and guidelines. Proper implementation of these management requirements would maintain acceptable soil productivity within each of the range allotments.

The majority of detrimental soil conditions are associated with existing roads and ground-based logging facilities in heavy use areas such as main skid trails and log landings. Assuming an average skid trail spacing of 100 feet, approximately 11 percent of the harvested acres would experience detrimental soil damage. An additional two (2) percent would be associated with landings.

Some previously managed areas currently have detrimental soil conditions that exceed 20 percent of an individual harvest unit or fuel treatment area. This is particularly true in stands that were treated prior to the establishment of LRMP standards and guidelines in 1990. These are estimated at 3,667 acres (10 percent) of the Coyote Allotment; 2,641 acres (7 percent) of the Cinder Hill Allotment; and 258 acres (2 percent) of the Pine Mountain Allotment.

Similar silvicultural and fuel reduction treatments are currently being planned for the Opine and Kelsey project areas and being implemented in the Fuzzy project area. All overlap portions of the Cinder Hill project area. The LRMP (page 4-70, SL-4) directs the use of rehabilitation measures when the cumulative impacts of management activities are expected to cause detrimental soil conditions that exceed more than 20 percent of an activity area.

In the past decade, reclamation treatments (subsoiling) has been used on unneeded roads and logging facilities to reduce the amount of compacted soil and improve soil conditions. This type of mitigation is included in project plans for all current and reasonably forseeable project activities. The extent of soil impacts from past activities occurred in smaller portions of the much larger range allotments which are considered to be the activity areas for this project.

The cumulative amount of detrimentally disturbed soil within each of the three allotments would be within allowable LRMP limits for maintaining soil productivity.

The effects of other natural events and management-related soil disturbances are relatively minor in comparison to soil impacts associated with the transportation system and existing logging facilities. Human impacts to the soil from recreational activities would likely continue to be confined to relatively small sites. Future recreation use is not expected to add appreciable amounts of soil damage above existing levels.

Road maintenance activities would reduce accelerated erosion rates where improvements are necessary to correct road drainage problems.

The installation of new cattleguards associated with designated OHV trail systems proposed by the Kelsey and Opine Access Management EAs would have a no effect on overall site productivity. Installation of nine (9) new OHV cattleguards would occupy less than 250 square feet or less than 0.01 acre across the entire project area.

There is little evidence of severely burned soil from past wildfire events or prescribed burn treatments. Future prescribed burn treatments would achieved under controlled conditions. It would not be anticipated that low-to-moderate intensity burns would result in detrimental changes to soil quality. There are no soil related concerns associated with the combined effects of these future activities.

In the short term, the amount of surface organic matter and coarse woody debris would remain the same or gradually

increase. In the long term, fuel accumulations would increase the risk for intense wild land fires on these grazing lands. The forested, transitional range sites would be the most vulnerable due to the type and amount of fuels. Severely burned soils would most likely occur where fire consumes thick brush or dense stands of trees. Surface soils and their nutrient reserves could be lost through accelerated erosion but there is low risk of soil mass failures (landslides) due to the stability of representive landtypes within these allotments.

The overall effects of the proposed management for this alternative combined with all past, present, and foreseeable management activities would be within allowable limits set by LRMP standards and guidelines for maintaining soil productivity.

SUMMARY

FOREST PLAN CONSISTENTCY

Under all alternatives, the percentage of soil dedicated to structural improvements (i.e., water sets and cattleguards) would be less than one percent for each of the three range allotments. Fence lines are not considered structures that convert the soil to a non-productive condition. Mowing activities for fence construction would not cause mechanical disturbance on sensitive soil areas. The cumulative amount of detrimentally disturbed soil from range structural improvements and all other management facilities would remain well within the allowable limits set by LRMP standards and guidelines for maintaining soil productivity in each allotment.

Under all alternatives, the proposed management would to maintain a stable vegetative trend and acceptable soil productivity in each allotment. The localized effects of soil disturbance caused livestock treading in random locations would be expected to recover in the short-term through natural processes. Livestock grazing does not remove existing sources of coarse woody debris. The forage resource would continue to be managed for long-term sustained productivity that meets soil resource objectives.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS

The action alternatives would not be expected to create any impacts that would cause irreversible damage to soil productivity. There is low risk for the proposed actions to cause soil mass failures (landslides) because there are no seeps, springs or seasonally wet soils on steep slopes. The planned locations for structural developments (e.g., fences, cattle guards) do not meet criteria for landslide prone terrain.

Soils dedicated to management facilities, such as water developments, the transportation system and cattleguards, are considered an irretrievable loss of soil productivity until their functions have been served and disturbed sites are returned back to a productive capacity. Under the action alternatives, the amount of land dedicated to structural improvements would be limited to the minimum necessary for management needs. Under all alternatives, the cumulative amount of detrimentally disturbed soil from all management facilities would remain well within allowable LRMP standards and guidelines.

SHORT-TERM USES OF THE HUMAN ENVIRONMENT AND THE MAINTENANCE OF LONG-TERM PRODUCTIVITY

LRMP management requirements and mitigation measures built into the action alternatives ensure that long-term productivity would not be impaired by the application of short-term management practices. The action alternatives would improve soil productivity in specific areas where reclamation treatments are used on unneeded water developments.

HERITAGE RESOURCES

EXISTING CONDITIONS

In accordance with the Standard and Guideline CR-1 (LRMP p 4-34) a professionally supervised cultural resource

inventory program has been developed for the Forest and District level projects. In the early 1990's a Geographic Information Systems (GIS) database was developed to summarize and compile known and newly recorded cultural resource information identified through surveys. Surveys are conducted using 30 meter spaced pedestrian transects and designed on probability models for high or low occurrence of historic properties. These are standards meeting the inventory plan and research design agreed to by the Forest Service and the Oregon Historic Preservation Office (OSHPO).

A GIS analysis for previous surveys and sites was completed for this project. The entire project area was initially analyzed to identify the total number of completed surveys and identified sites. This was further divided into data for each allotment. The analysis shows 24,653 acres, or 28percent of the project area, has been previously surveyed. Table 13 summarizes the results of these previous survey efforts.

Table 13 Cultural Resource Survey Results by Allotment, Cinder Hill Project Area

Allotment	Acres Surveyed	Percent Surveyed	Number of Sites Identified
Coyote	4,345	12	33
Cinder Hill	19,350	50	107
Pine Mtn	958	6	16
Project Area Totals	24,653	28	156

Of the 156 sites identified, 114 are prehistoric ranging in size from small lithic scatters to very large sites with features. The other 42 sites are historic sites ranging from small can dumps to remnants of railroad logging camps. Twenty-nine (29) sites have been determined eligible for the National Register of Historic Places (NRHP); 26 have been determined ineligible; and the remaining 101 have not been evaluated and are potentially eligible for the NRHP.

Based on the GIS analysis, approximately 64,670 acres, or approximately 72percent of the project area, has not been surveyed. Based upon the results of the GIS analysis, it is reasonable to assume that there is a distribution of currently unknown and unidentified cultural sites on these lands across the project area.

The District cultural resources files contain records of past Range Allotment Plans dating from the early 1930's. Goddard and Bryant, in their overview of cultural resources of the Deschutes National Forest (1979), discuss livestock gazing as being on the Forest as early as the 1880's with the cattle grazing allotment system created by the Forest Service in 1906. Sheep were the major livestock that were grazed on the southern end of the District until the 1960s when cattle replaced many of the sheep herds. Evidence of that historic grazing can still be seen as stock driveways and an occasional metal sign proclaiming that the route is a stock driveway.

As is the case today, water sources were not available in the project area. Water was hauled in by the permittee from wells or shallow scoops were constructed where perched water tables were found.

Ranger district records contain information of past use within allotments. They discuss the early history of use including improvements such as fences, water sets, seasons animals were grazed, and the type and number of animas grazed.

Levels for definable damage to cultural resources is not known because monitoring for effects of dispersed grazing has not been conducted. However, grazing is recognized as having minimal effects on the surface component of a cultural site. Although the effects of grazing have not been documented, it could be assumed that disturbance to surface site manifestations are directly proportional to the number of animals grazed. The buried component of a site, generally anything below 30 centimeters (approximately 12 inches), does not appear to be affected under normal grazing practices.

In a protocol implementing the Bureau of Land Management (BLM) national cultural resources Programmatic Agreement (PA) in Oregon and as agreed to by the Oregon State Historic Preservation Office of Oregon (OSHPO) (1979) dispersed grazing is regarded as having a low potential to impact cultural resources values. Concerns arise for cultural resources in areas where specific land disturbing developments or activities are proposed. Such activities could include where animals tend to congregate, such as around water sets and salt licks; new fence construction; and the rehabilitation of water sets. These actions could expose sites currently below the ground surface, displace artifacts within sites, and could break some artifacts. Disturbance to unknown sites could lead to a loss of information regarding the activities that took place at these sites, the time period during which they occurred, and the duration of activity. The Deschutes National Forest issued direction in March 2003 to utilize this protocol to assist in the determination of effects on and eligibility for inclusion on the National Register of Historic Sites.

In 1995, Region 6, USDA Forest Service, the Advisory Council on Historic Preservation (ACHP) and OSHPO signed a programmatic agreement dealing with cultural resource management on National Forests in Oregon. That agreement streamlined procedures for some undertakings by identifying activities that are considered to have little or no potential to effect cultural resources. These activities are described in Appendices A and B of that agreement (see specialist report and appendices). The agreement also includes a non-undertaking category designed to comply with Section 106 of the National Historic Preservation Act (NHPA). These activities are excluded from case-by-case review. A determination by a specialist may require inspection or monitoring of the activity.

Some of these activities are directly related to range improvements and meet the conditions for exemption from Section 106 Compliance Review. Appendix A includes fence construction and maintenance that does not require blading of the fence line. Appendix B includes construction of corrals and other fence structures that lead to the concentration of livestock in a confined area, and range improvements or/maintenance (e.g., pipelines and reservoirs). Non-undertakings includes the replacement of non-historic watering troughs.

In 2002, the list of range management projects exempt from Section 106 Compliance review in the Forest Service programmatic agreement was updated to include cattle guard installation within the road prism and new construction of aboveground water holding tanks and lines.

In 1996, the Skeleton Fire burned approximately 7,078 acres in pasture 1 of the Coyote allotment and a small portion of pasture 2 of the Cinder Hill allotment. There has been a loss of cultural resources due to the loss of vegetation, erosion and collection by artifact collectors.

There is ongoing monitoring of three cultural resources sites that have been determined eligible for the National Register of Historic Places (NRHP) within the Pine Mountain Allotment. These sites are associated with the East Fort Rock OHV trail system and are monitored to determine the effects of OHV use on those sites.

ENVIRONMENTAL EFFECTS

EFFECTS COMMON TO ALL ALTERNATIVES

Issue 1, vegetative conditions outside the range of natural variability resulting in higher fuel loadings and larger, more intense wildfires, has the potential to impact heritage resources. Wildfires expose surface sites by removing vegetation. Intense fires generate high soil temperatures which can damage or destroy buried artifacts at depths up to 12 inches.

Issue 2, reducing or eliminating grazing on public lands, would have little or no measurable effect on heritage resources. Grazing practices, including the construction

and maintenance of improvements, are considered to have no effect under the Forest Service Programmatic Agreement. Monitoring of construction and the location of water sets would also reduce the risk to unknown sites.

Issues 3, conflicts between grazing and wildlife, and 4, the increasing risk of accidents and conflicts between grazing operations and other forest users, have no effect on heritage resources.

ALTERNATIVE 1 – CURRENT MANAGEMENT

DIRECT AND INDIRECT EFFECTS

There would be no direct or indirect effects on cultural resources under this alternative. There would be no new fences or cattle guards constructed or water sets established. Existing improvements would continue to be maintained by permittees. Such improvements are considered to have little or no potential effect on cultural resources under the terms of the Forest Service Programmatic Agreement.

There would be no change in the size of allotments or pastures. The number of livestock and seasons of grazing would not change. Coyote Allotment would continue to remain vacant; grazing of sheep and goats would not be permitted.

Dispersed grazing was recognized as having little or no potential to affect cultural resources in the 1979 BLM programmatic agreement (Appendix B). Current grazing practices on the Deschutes National Forest fit the description of dispersed grazing.

Livestock congregating at water set locations have the potential to affect known and unknown cultural resources, particularly surface sites such as lithic scatters. Existing water sets, used repeatedly over a number of years, may have disturbed or destroyed sites by churning, trampling and exposure. Sites present prior to the establishment of existing water sets are likely to have been previously damaged or destroyed. Activities proposed under this alternative would not be expected to further impact these resources.

There would be no impacts to buried cultural resource sites (buried at depths of 30 cm or greater). No subsoiling of water sets is proposed.

CUMULATIVE EFFECTS

Deterioration from erosional processes and continuation of other activities would continue in all allotments.

Deterioration due to continued grazing would continue in both the Cinder Hill and Pine Mountain Allotments. Deterioration due to continued grazing in the Coyote Allotment would cease because the allotment would remain vacant. It would resume if grazing was permitted as the result of a future analysis and NEPA decision.

New OHV cattle guards would be expected as a result of proposed actions associated with the Kelsey and Opine Access EAs. . These would be located on existing fence lines and would be located to avoid known cultural resource sites. Unknown sites identified during require cessation of construction and evaluation by an appropriate specialist. Site specific analysis of specific locations would be included as part of those projects. Avoiding known sites and contract requirements and/or project design criteria to deal with unknown sites would be expected to result in no additional cumulative effects.

Changing the Kelsey and Opine project areas from “Open Unless Posted Closed” to “Closed Unless Posted Open” would reduce the level of damage to surface cultural sites by restricting use to designated roads and trails. This change would also reduce the potential for damage to subsurface sites. There would be no change in the level of impact to surface sites or potential to damage subsurface sites within the Fuzzy project boundary.

ALTERNATIVE 2 – PROPOSED ACTION AND ALTERNATIVE 4 – GRADUAL GRAZING REDUCTION

(PINE MOUNTAIN AND CINDER CONE ALLOTMENTS)

DIRECT AND INDIRECT EFFECTS

Improvements proposed under this alternative, including new fence construction, construction and removal of cattle guards and the placement of seven (7) new water sets, would have no direct or indirect effects on cultural resources (1979 BLM PA and 1995 FS PA). Section 106 consultation would not be required.

New fence construction and the placement or removal of cattle guards are activities categorized as exempt under the 1995 programmatic agreement as amended.

New fence construction would require the mowing of vegetation to a height of six (6) to eight (8) inches. Mowing is identified in Appendix A of the 1995 programmatic agreement as an activity identified as being exempt from review. However, where terrain is uneven, the mower may strike the ground surface and cause ground disturbance and could potentially affect known or unknown cultural resources. Monitoring mowing by knowledgeable specialists coupled with appropriate contract or permit clauses to protect unknown sites would be expected to result in no effects to those resources.

Road cattle guard placement or removal would occur within road prisms, areas that are already disturbed.

New water sets, proposed in the Cinder Hill Allotment, would be located away from known sites and therefore avoid impacts to those sites. Water set establishment requires only the placement of one or more tanks and does not require ground disturbance.

There would be no effects to cultural resources from reopening approximately one and one quarter (1.25) miles of obliterated roads to three (3) proposed new water sets. Reopened roads would be located in the same location and are previously disturbed sites.

Livestock congregating at water set locations have the potential to affect known and unknown cultural resources, particularly surface sites such as lithic scatters. Existing water sets, used repeatedly over a number of years, may have disturbed or destroyed sites by churning, trampling and exposure. Sites present prior to the establishment of existing water sets are likely to have been previously damaged or destroyed. Activities proposed under this alternative would not be expected to further impact these resources.

Nine (9) existing water sets would be closed. Allowing these sites to naturally restore and revegetate themselves would have no impacts on either surface or subsurface sites. Subsurface sites would potentially be impacted if water sets were subsoiled by ripping to depths greater than 30 cm (12 inches) after the set was closed. Ripping would potentially:

- break artifacts;
- expose unknown sites;
- damage site matrices; and
- lead to the loss of information regarding activities on the site. This would include the duration of those activities and the time period in which they occurred.

Contract provisions requiring site protection and evaluation procedures coupled with requiring the presence of a qualified specialist on site during ripping operations would be expected to reduce the damage and destruction to such sites.

The potential to impact buried sites would increase if retired water sets were permitted to revegetate naturally. Such sites historically have become dispersed camping sites. Such use commonly involves trailers, recreational vehicles, four wheel drive vehicles, and often OHVs.

Grazing of livestock is recognized by both the 1979 BLM protocol and the 1995 FS protocol as having little or no potential to affect cultural resource sites. Existing surface sites have likely been affected by over 70 years of grazing; proposed stocking levels would not be expected to increase the scope or intensity of impacts beyond

those already present. Proposed stocking levels would be at or below current levels. Acres available for each cow/calf pair would remain the same or, in the Cinder Hill Allotment, increase. Surface disturbance would remain constant or decline.

There would be no effect on either surface or subsurface cultural resources by establishing a forage reserve in the new Bessie Allotment (west portion of the Coyote Allotment). Grazing would be temporary, short-term, and not every year. Cattle would be limited to two (2) pastures; sheep and goats permitted in all four (4) pastures.

There would be no effect allowing sheep and goats to graze in the proposed Bessie Allotment (west portion of the Coyote Allotment). This would not be a yearly practice on any given site. The season would be limited in duration. Bedding sites would be limited to disturbed sites such as utility rights-of-way and cinder pits. No permanent fences would be required. Watering sites would be temporary and also limited to existing disturbed sites.

CUMULATIVE EFFECTS

There would be no cumulative effects on cultural resources under this alternative.

Deterioration from erosional processes and other continuing activities would continue.

Changing the Kelsey and Opine project areas from “Open Unless Posted Closed” to “Closed Unless Posted Open” would reduce the level of damage to surface cultural sites by restricting use to designated roads and trails. This change would also reduce the potential for damage to subsurface sites. There would be no change in the level of impact to surface sites or potential to damage subsurface sites within the Fuzzy project boundary.

ALTERNATIVE 3 – NO GRAZING AND ALTERNATIVE 4 (COYOTE ALLOTMENT – WEST PART)

DIRECT AND INDIRECT EFFECTS

There would be no direct or indirect effects of this alternative on cultural resources. The 1995 Forest Service programmatic agreement identifies grazing and the construction and maintenance of improvements as having little or no potential to affect cultural resources and therefore not subject to Section 106 compliance review. Removal of such improvements is not explicitly stated. Removal would occur on the same sites and use the same tools and similar procedures as construction and maintenance.

Impacts to existing and unknown surface sites from grazing would be eliminated. This alternative would remove all livestock. No soil churning, trampling or exposure of artifacts would occur. Livestock would not congregate at water sets and would not trail along fence lines.

Seventy (70) existing water sets would be closed. Allowing these sites to naturally restore and revegetate themselves would have no impacts on either surface or subsurface sites. Subsurface sites would potentially be impacted if water sets were subsoiled by ripping to depths greater than 30 cm (12 inches) after the set was closed. Ripping would potentially:

- break artifacts;
- expose unknown sites;
- damage site matrices; and
- lead to the loss of information regarding activities on the site. This would include the duration of those activities and the time period in which they occurred.

Contract provisions requiring site protection and evaluation procedures coupled with requiring the presence of a qualified specialist on site during ripping operations would be expected to reduce the damage and destruction to such sites.

The potential to impact buried sites would increase if retired water sets were permitted to revegetate naturally. Such sites historically have become dispersed camping sites. Such use commonly involves trailers, recreational vehicles, four wheel drive vehicles, and often OHVs.

CUMULATIVE EFFECTS

Deterioration of sites from other activities and erosional processes would continue.

Changing the Kelsey and Opine project areas from "Open Unless Posted Closed" to "Closed Unless Posted Open" would reduce the level of damage to surface cultural sites by restricting use to designated roads and trails. This change would also reduce the potential for damage to subsurface sites. There would be no change in the level of impact to surface sites or potential to damage subsurface sites within the Fuzzy project boundary.

OFF HIGHWAY VEHICLES (OHV)

EXISTING CONDITIONS

There are approximately 138 miles of designated, managed off-highway vehicle (OHV) trails within the Cinder Hill project area. All are within the East Fort Rock OHV Trail System and are designed to accommodate motorcycles and quads. There are no trails designed for four wheel drive (4WD) vehicles such as Jeeps. The designated trails lie within all five pastures of the Cinder Hill Allotment, pasture 2 of the Coyote Allotment, and the Coop (South) pasture of the Pine Mountain Allotment.

All designated trails that pass through pasture fence lines are required to have an OHV trail cattleguard installed with a bypass gate. There are 29 of the OHV cattleguards within the project area. Some of these cattleguards have been in place for 15 years. They have proven effective in allowing vehicle but not livestock passage as long as they are maintained and cleaned out. They have successfully mitigated the issue of range gates being left open by OHV recreationists on the designated trails.

There are approximately 20 miles of undesignated, unmanaged, user-created OHV trails in pastures 5 and 6 of the Coyote Allotment. There are another three to four (3-4) miles of trail in the western portion of the pasture 4. These, and an existing play area (1801 Play Area), are currently closed by Forest order.

Under Oregon law (ORS 821.055), all roads not maintained for passenger car travel are open to Class 1 (quads), Class II (4WDs), and Class III vehicles (motorcycles). These correspond to roads that are classified as maintenance Level 2 roads under Forest Service Handbook (FSH) 7709.58. There are 194 miles of Level 2 roads within the project area but outside of the East Fort Rock Trail System. Non-street legal vehicles can potentially travel all of these roads. Within the trail system area, all roads are closed unless posted as open, including Level 2 roads. Open roads are signed as Shared Use Roads (SURs). There are 10 miles of SURs within the five (5) pastures of the Cinder Hill Allotment and five and seven tenths (5.7) miles within the Coop (South) Pasture of the Pine Mountain Allotment.

The 1990 Deschutes National Forest Land and Resource Management Plan (LRMP) has four management allocations within the project area:

- General Forest (MA-8) 15,207 acres;
- Deer Habitat (MA-&) 62,766 acres;
- Old Growth (MA-15) 1,365 acres; and Scenic Views (MA-9) 8,881 acres.

Under the LRMP standards and guidelines (M8-4, M7-1, M15-3, M9-3, TR-7 and TR-8), these management areas are open to all modes of travel, including cross-country travel, unless specifically closed.

There are five restricted travel areas within the project:

- the 1801 Play Area (approx. 2500 acres);
- Bessie Butte (approx 640 acres);
- the Skeleton Fire (approx 7500 acres);
- the Evans West Fire (approx 1900 acres); and
- East Fort Rock (41,026 acres).

Approximately 40percent of the Cinder Hill project area is open to unrestricted travel. In the fall during the general deer rifle season, there is a Green Dot Travel Management Restriction for all of the Pine Mountain Allotment. This restricts all

motorized vehicle access to certain roads and closes all motorized trail access.

There are approximately 43 miles of Maintenance Level 3-5 roads in the project area. These are generally high-speed, high-traffic volume roads that are maintained for passenger cars. All have full-size cattleguards where the road passes through pasture fence lines. There are 35 road cattleguards in the project area.

Public use of the eastside of the District has increased dramatically in the last 15 years. In 1988, it was rare to see another vehicle, dispersed camp or another person over the period of a weekend. That is not true today. Several factors contribute to this change.

First and foremost is the population growth in Bend and the surrounding communities. With more people, there is more demand to use and recreate on public lands.

Second is increased activity in the southern and eastern Bend urban interface.

Third is the development of East Fort Rock. This trail system is recognized nationally and it is now a destination for OHV recreationists locally, regionally, and nationally.

Fourth is the desire by many to seek a quality dispersed recreation experience. The westside of the Bend-Fort Rock Ranger District is a destination mecca for a myriad of recreation pursuits. It is increasingly crowded, offers high-quality developed recreation opportunities, but offers a diminished quality of dispersed recreation opportunities. People seeking fewer human encounters are now playing on the eastside of the District. A similar eastward trend is being observed on the Ochoco NF and Prineville District of the BLM.

Pastures 3, 4, and 5 of the Coyote Allotment are in the heart of the Bend urban interface. This area experiences a great deal of legal and illegal use. It also has a number of issues including but not limited to:

- shooting;
- dumping;
- parties;
- conflicts between users and user groups;
- fires;
- subdivision conflicts with public land users;
- noise;
- dust;
- traffic; and
- wildlife harassment.

Road 18, China Hat Road, serves as the major arterial access route to the eastside of the District. It runs through the core of the urban interface and bisects the entire length of the project area. It is a high-speed, high-traffic volume road that has heavy use, both day and night. It also has a range of issues including:

- speeding;
- reckless driving;
- driving under the influence; and
- illegal vehicles on the road.

In 2000, the annual traffic volume was 79,205 and in 2001, it had grown to 83,220 vehicles.

Outside the urban interface, the primary recreation activities include spelunking, hunting, OHV riding, driving for pleasure, mountain biking, horseback riding, and hang gliding/parasailing. Road 18 is heavily used by people seeking to explore the caves-Wind Cave, Skeleton Cave, Boyd Cave, and Arnold Ice Cave. Despite actions to de-emphasize and regulate access to the caves, they still serve as a magnet for a host of legal and illegal uses. Boyd Cave is in pasture 4 of the Coyote Allotment. The others are located in pasture 1 of the same allotment.

The East Fort Rock OHV trail system receives approximately15,000 visitors annually. Approximately 80percent come from outside of Central Oregon. The Cinder Hill pasture 5 serves as the “core area” for the OHV use. This pasture contains the Road 2510 Staging Area, the Road 25 Staging Area, and the Camp II OHV Trailhead that are all developed OHV facilities. There are also approximately 35 dispersed camps in this pasture that are used regularly by OHVers, hunters, and

others. Many of the water sets are used in the off-season as dispersed campsites. Of particular concern is the water set adjacent to Road 2500-800 that is heavily used by OHV recreationists accessing the Road 25 Staging Area. There is considerable potential for cow/vehicle disturbance and conflict if this water set is used early in the grazing season.

The primary use season at East Fort Rock is March through July Fourth with the bulk of the use on weekends. A typical spring weekend will have 200-300 OHV recreationists. The peak weekend is Memorial Day with approximately 1,500 OHV recreationists. Use levels drop as the temperature and dust level increases. As use increases, more riders are coming mid-week or off-season to avoid "the crowds." Approximately 85percent of the users camp using everything from tents to pickup campers to the largest motor homes and fifth wheel trailers. They tend to camp in groups of 4-12 people; it is not unusual to see groups with 50-150 people.

The primary recreation uses on the Pine Mountain Allotment are hunting, hang gliding/parasailing, driving for pleasure, dispersed OHV touring, and visiting the Pine Mountain Observatory.

ENVIRONMENTAL EFFECTS

Issue 1: Vegetative conditions outside the range of natural variability resulting in higher fuel loadings and larger, more intense wildfires.

This issue has the potential to impact OHV use. Increased fuel loadings increase the risk of wildfire removing vegetation adjacent to OHV trails. This would increase the risk of illegal, off-trail riding and damage to other resources.

No alternative proposes fuels reduction treatments. Grazing would reduce fine fuels but would not affect the amount or distribution of larger fuels. Alternative 3 would have the highest risk because there would be no grazing. Alternative 1 would reduce the risk somewhat. Alternatives 2 and 4 would reduce the risk below that of Alternative 1 because of the return to full stocking in the Cinder Cone Allotment.

Issue 2: Reducing or eliminating grazing on public lands; and

Issue 4: Increasing risk of accidents and conflicts between grazing operations and other forest users.

These issues would effect OHV use. In alternative 3, conflicts at staging areas and dispersed sites would be reduced or eliminated. Damage to facilities caused by livestock would also be eliminated. Accidents between livestock and OHVs or other vehicles would also be eliminated**.**

Alternatives 2 and 4 would reduce conflicts, particularly at staging areas by fencing and moving water sets. The risk of accidents between livestock and other forest users under these alternatives would continue to increase due to increasing recreational use and demand.

Alternative 1 would see continued conflicts, particularly at water sets and staging areas. No water sets would be moved. No staging areas would be fenced to reduce or eliminate livestock use. The risk of accidents between livestock and other forest users would continue to increase due to increasing recreational use and demand. This increase would be expected to be the same as for Alternatives 2 and 4.

Issues 3: Conflicts between grazing and wildlife.

This issue would have no effect on OHV use.

ALTERNATIVE1 – CURRENT MANAGEMENT

DIRECT AND INDIRECT EFFECTS

Coyote Allotment

There would be no effect on OHV use or activities within this allotment. The allotment would remain vacant and grazing would not be permitted without additional analysis and a separate decision.

The northwestern portion of the allotment (the Kelsey project area) is currently closed to OHV use under an emergency closure. The closure would be lifted if a managed and designated trail system were implemented as a result of a decision associated with the Kelsey Access Management EA (see following cumulative effects discussion). The remainder of the allotment remains open to unrestricted OHV use.

There would be no effects on public safety because there would be no livestock on either roads or trails. Deteriorating fence lines would continue to pose a risk to OHV riders only in the eastern portion of the allotment where OHV is permitted. Deteriorating fence lines would pose a risk to riders in the western portion if the closure order is removed or a managed, designated trail system developed and implemented prior to the allotment being restocked with livestock at some future time.

There would be no OHV management or maintenance issues. With an inactive allotment, there would be no OHV sign and fence repair caused by cattle in the 1801 Play Area Closure Area.

Cinder Hill and Pine Mountain Allotments

There would be some risk as it exists today, but no additional risks posed to public safety by cattle on roads or trails. Both allotments are currently being grazed and grazing would continue under this alternative. There would be no increase in the numbers of livestock in either allotment.

OHV management issues and associated costs would remain as they are today. There are 29 OHV cattleguards associated with East Fort Rock in the Cinder Hill Allotment and five (5) in the Pine Mountain Allotment. No additional cattleguards would be required in either allotment. In pasture 5 of the Cinder Hill Allotment, livestock would continue to congregate in the Road 2510 Staging Area staging area, rub the signs and posters off the kiosk, and interfere with recreationists trying to camp there. No new water sets would be developed that would lure livestock away from the staging area. Annual livestock related maintenance costs would remain about the same, approximately $1,450 for cattleguard repair, $1,000 for sign and fence repair, and approximately $1,500 in trail tread repair.

In the Pine Mountain Allotment, annual maintenance costs associated with livestock would be expected to cost approximately $250 for cattleguard repair. Only the Coop pasture is within the East Fort Rock OHV Trail System. There are no developed OHV facilities and there is a much lower level of impacts to signs, posts, fences, and trail treads.

Range management issues and costs would be expected to remain the same. The potential conflicts at the Road 800 water set would continue, especially if the pasture is active early in the season when OHV use is the highest. New water sets would not be established that would reduce the risk of conflicts between livestock and recreational use at the water set. This water set is approximately ¼ mile from the Road 25 Staging Area. Livestock going to and from the water set create numerous trails through the staging area. This would increase the risk of OHV riders becoming confused trying to determine which trails OHV use is permitted.

CUMULATIVE EFFECTS

Coyote Allotment

The Kelsey Access Management Environmental Assessment proposes to implement a managed OHV trail system. It also proposes to close the project area to unrestricted off-highway vehicle use except on designated roads and trails. This would result in the construction and establishment of trails, trailheads, play areas, signs and kiosks, and other features associated with a designated trail system.

Trails would pass through existing fence lines in six (6) locations. OHV trail cattleguards would be installed if construction funds were adequate. If not, access through existing fence lines would be by removing strands of fence wire in the section traversed by the trail. Cattleguards

would be installed and removed wire restored when the allotment again became active.

There would be no effect on either OHV management or maintenance. There are no current plans or expectations that the allotment would be restocked in the future should this alternative be selected and implemented.

Implementation of a designated trail system in the Kelsey project area would result in approximately 750 riders moving from the EFR system (approximately five (5) percent of the EFR rider population). There would be no effects on grazing under this alternative as grazing would not be permitted.

Cinder Hill Allotment

Road 2500-800 and Road 2510 are proposed to be improved by placing new gravel on the road surface. Road 800 would be graveled from the staging area to the junction with Road 25 and would pass the water set between the junction and staging area. Graveling the road would reduce dust, reduce road maintenance, improve water haul by the permittee to the water set, and increase the use of the staging area. It would increase the potential of conflicts between livestock and vehicles and OHV use. Livestock use of the water set would impact the integrity of the gravel surface by moving gravel to the side of the road.

Road 2510 would be graveled from Road 25 to the Road 2510 Staging Area. This road is not currently used for water haul; there would be no beneficial effect to the permittee. Road 2510 is a Shared Use Road and a better surface could increase vehicle speeds on the road which could increase risks to public safety when the allotment is active. The increase in risk would be negligible because of the straight alignment and good sight distance on this road segment of the road.

Approximately six and six tenths (6.6) miles of system road would be signed as shared use roads (SUR) for OHV use.

Approximately one and one tenth (1.1) miles would be located within pasture 2 and five and one half (5.5) miles within pasture 5. These roads would provide legal access from dispersed camps to the nearest designated OHV road or trail.

Two roads, Road 2500-800 and 810, would potentially increase vehicle use through the Road 800 water set. This would potentially increase the risk of more encounters between vehicles and livestock when the allotment and water set are active. It would also potentially increase the potential for disturbance and herding of livestock using the water set.

The water set on Road 2510-340 is also a primary dispersed camp when the pasture is not active. Road 340 would also become a SUR from the water set/camp east to Trail 50. Since this camp is not active when the pasture is active, this road should have no effect on cattle use or permittee vehicle use.

Roads 2510-100, 2510-150, and 1800-650 will also become SURs to facilitate the east-west flow of OHV traffic from the vicinity of the Road 2510 Staging Area to the vicinity of the Camp II Trailhead. There are two water sets along these road segments and Road 650 provides access to a third. When the water sets are active, there would be potential for more vehicle encounters with cows, for disturbance/herding of cows at the water sets, and for congestion and safety issues with water trucks. The increase of traffic on these roads would also increase the need and cost for road maintenance.

Approximately three and eight tenths (3.8) miles of existing OHV trails are proposed for relocation in pastures 5 and 3. In pasture 5, approximately two and two tenths (2.2) miles of Trail 60 is proposed for relocation to make the trail easier to maintain and provide a better riding experience. There would be no change in effects on this alternative.

In pasture 3, one and six tenths (1.6) miles of Trail 25 are proposed for relocation. The trail would be moved away from a pasture fence. It would reduce the potential for

encountering livestock trailing along the fence line.

The Bend-Fort Rock Ranger District is proposing an environmental assessment to address access and facility needs within the East Fort Rock OHV Trail System. It proposes to expand the useable space within the Road 25 Staging Area which would potentially increase the traffic past the water set on Road 800. This would further increase the risk of more encounters between vehicles and livestock when the allotment and water set are active. It would further increase the potential for disturbance and herding of livestock using the water set. It would also increase safety concerns and congestion associated with water trucks and recreational traffic.

The EA also proposes to address the need for additional trails and Shared Use Roads to provide legal camp access and to facilitate the flow and dispersal of OHVs through East Fort Rock. This would further increase the risk of accidents or conflicts with livestock, increase safety concerns, and congestion.

Over the past 10 years, use at EFR has risen from approximately 5,000 visitors per year to approximately 15,000, an increase of approximately 12 percent per year. This has been in conjunction with an ever-increasing population and continuing growth in OHV sales. Continued increasing use would be expected to result in:

- increased risk of conflicts between livestock and other forest users at water sets and at dispersed and developed recreational sites;
- increased costs associated with livestock damaging recreational facilities and improvements;
- increased potential for vehicle accidents between water trucks and other recreational vehicles including OHVs;
- increasing potential of harassment of livestock by OHVs; and
- increasing potential for damage to range improvements such as fences.

These impacts would be expected to be limited in location, duration and intensity.

Implementation of a designated trail system in the Kelsey project area would result in approximately 750 riders moving from the EFR system (approximately five (5) percent of the EFR rider population). There would be no change in the effects on grazing under this alternative as the projected change in use is small.

The Prineville District of the Bureau of Land Management (BLM) is studying OHV use in their Upper Deschutes Resource Area Management Plan/EIS. It proposes a managed OHV trail system of some type in the Cline Buttes area west of Redmond, Oregon, approximately 15 air miles northwest of Bend. Development of this area would have no effect on grazing or OHV use within the Cinder Hill project area. The Cline Buttes area would be primarily used during the winter when EFR is generally closed by snow. It is not projected to draw additional new users.

The South Millican OHV area is currently closed to OHV use between December 1 and July 31 of the following year. The Upper Deschutes Management Plan/EIS proposes to restore riding all year but reduce the number of designated routes. This would have no measurable effect on either the Cinder Hill or Pine Mountain Allotments.

The Opine Vegetation Management Environmental Assessment proposes to close those areas currently open to unrestricted off-highway vehicle use and require OHVs to use designated roads and trails. This proposal would have no effect on grazing under this alternative. That portion of the Cinder Hill Allotment within the Opine project area boundaries is also located within the boundaries of the EFR OHV Trail System. Travel by OHVs is currently prohibited except on designated roads and trails within the boundaries of the EFR trail system.

Pine Mountain Allotment

The Opine Vegetation Management Environmental Assessment proposes to close those areas currently open to

unrestricted off-highway vehicle use and require OHVs to use designated roads and trails. It would close the remaining three (3) pastures (Pine, Micro and South) to off-highway vehicle use except on designated roads and trails. The Coop pasture is located within the EFR trail system and OHV use is currently restricted to designated roads and trails.

OHV use on Pine Mountain is limited by terrain, a relative lack of access by trails or roads, and dense stands of timber. These factors also serve to limit impacts of OHV use on grazing and livestock. Restricting use to designated roads and trails would further reduce impacts. Damage to fences resulting from OHV users cutting fences would be eliminated because there are currently no designated trails. The potential for accidents between water trucks and OHVs would be reduced because of improved informational and regulatory signing. Water sets near designated trails would be fenced to limit contact and conflicts between livestock and OHV users. The risk of harassment to livestock by OHV use would be reduced but not eliminated by limiting the area (designated roads and trails) where livestock and OHVs would be likely to interact.

The Opine Access Management Environmental Assessment proposes to close approximately 25 miles of system roads and designate portions of other roads as shared use for use as OHV travel routes. Road closures would occur across the Opine project area (approximately the east half of the Cinder Hill Allotment and all of the Pine Mountain Allotment).

The Opine Access Management EA also proposes to construct additional OHV trails to provide connections and loops on Pine Mountain. User created routes would be closed and rehabilitated. The new OHV routes would be located on Pine Mountain. They would connect to but not be part of the EFR system.

Effects on grazing from implementation of the Opine Access Management EA would include the following:

- damage to fences resulting from OHV users cutting fences would be eliminated because cattleguards would be constructed where designated trails intersect fence lines;
- the potential for accidents between water trucks and OHVs would be reduced because of improved informational and regulatory signing;
- the risk of harassment to livestock by OHV use would be reduced but not eliminated by limiting the area (designated roads and trails) where livestock and OHVs would be likely to interact;
- three (3) cattleguards would replace three (3) existing gates reducing the risk of gates being left open and livestock trespassing into adjacent pastures; and
- grazing-related sign, fence, and tread maintenance would cost approximately $850 per year.

OHV routes would be located to minimize impacts to water sets and livestock. Use of enclosures to contain livestock would be used in some sites to further minimize contacts and conflicts between livestock and OHV riders.

Some increase in the risk of vehicle accidents between OHVs and water trucks or other vehicles associated with grazing operations would be expected. This would only be expected on Road 2017 on the segment between the 100 and 400 junctions. Non-street legal OHV use is currently prohibited on Road 2017 between the forest boundary and Pine Mountain Observatory. Use of non-street legal OHVs is permitted on Road 2017 from just south of the observatory to the Road 2017/Road 23 junction and all other maintenance class 1 and 2 roads on Pine Mountain.

Establishing a managed trail system on Pine Mountain would be expected to increase use by an estimated 10-15 percent or approximately one to two riders per weekend day. There are currently six to twelve riders using Pine Mountain on a weekend day. Managing this proposed

system would require signing and maps; actions which tend to draw attention and additional riders.

Impacts to grazing operations and livestock would be expected to increase. Use at the EFR system has increased from approximately 5,000 visitors in 1993 when it was created to approximately 15,000 today, an annual increase of approximately 12percent per year. Increasing population and the growth in OHV sales is expected to result in a continuing increase in the number visitors. This would result in an increase in the potential for conflicts between those users and livestock and grazing operations. More water sets would be used for camping and staging areas. This could displace livestock and could result in relocation of the water set. Based on use patterns of popular dispersed sites including old water set locations, loss of vegetation and expansion of detrimentally impacted soil areas would be expected.

Risks of vehicle accidents between water trucks and recreational vehicles and OHVs would increase.

Harassment of livestock would be expected to increase.

Damage to trails and recreational improvements would also be expected to increase if there are increases in the number and distribution of developed facilities including trails and staging areas. Increasing recreational use and demand would be expected to result in increased damage to grazing improvements, particularly fences. Maintenance and repair costs for facilities and improvements, for both the grazing permittee and the district range and OHV programs, would also be expected to increase.

Implementation of a managed OHV trail system in the Kelsey project area would be expected to result in a shift of approximately five (5) percent of the users at the EFR trail systems or approximately 750 riders. It is expected that these would be predominately local users; i.e. users from Bend or nearby communities. Use would be concentrated to the designated roads and trails and eliminated from other areas. This shift would be expected to have little or no additional impact on grazing or livestock across the Cinder Hill project area.

The Prineville District of the BLM is studying OHV use as part of their Upper Deschutes environmental impact statement with a draft due out late this year. A managed trail system is proposed in the Cline Buttes area west of Redmond. This would have little or no impact on grazing in the Cinder Hill area. Use at the Cline Buttes site would primarily occur during the winter months when most of the Cinder Hill area is closed by snow and not being grazed.

The BLM is also evaluating OHV use in the Millican area immediately adjacent to both Cinder Hill and Pine Mountain Allotments. The South Millican OHV area is currently closed to OHV use between December 1 and July 31. The Upper Deschutes Management Plan/EIS proposes to terminate the closure but reduce the number of trails within the area. This would have little or no measurable impact on grazing in the Cinder Hill project area.

Over a 10-year period, this alternative would cost the OHV program $42,000 in grazing related expenses for East Fort Rock. If Kelsey and OPINE are implemented, expenses would increase to approximately $58,000, an increase of approximately $16,000.

ALTERNATIVE 2 – PROPOSED ACTION

DIRECT AND INDIRECT EFFECTS

Bessie (Coyote) Allotment

Allowing grazing in this allotment would have no effect on OHV use or activities within this allotment. The majority of this reconfigured allotment (western portion of the Coyote Allotment) is currently closed to OHV use under an emergency closure. The closure would be lifted if a managed and designated trail system were implemented as a result of a decision associated with the

Kelsey Access Management EA (see following cumulative effects discussion).

Risks of accidents between livestock and vehicles would be eliminated when the allotment was not grazed. The allotment would become a forage reserve, grazed only when a permittee was forced off an existing allotment by wildfire or other event that precluded grazing for a period of time. Cattle and horses would be limited to two (2) pastures, east and west. Grazing would be irregular, potentially with multiple years between permits. Grazing of sheep and goats potentially could occur each year but would be tightly focused on specific sites and changed yearly.

The risk of accidents between recreational vehicles, including OHVs, and water trucks would also be eliminated during years when the allotment was not grazed. The risks would be expected to increase slightly during years when grazing did occur because the public would not be expecting water trucks on roads after periods of no grazing. Risks would be lowered with additional public notices and signing.

The deteriorating fence lines would continue to pose risks to OHV riders only in the eastern portion of the allotment that is outside the emergency closure order. These risks would remain until a new permittee rebuilt or repaired those lines.

Deteriorating fence lines would pose a risk to OHV riders in the remainder of the allotment only if the closure order was removed or the managed and designated OHV trail system proposed under the Kelsey Access EA was implemented. The risks would remain until a new permittee rebuilt or repaired those existing fence lines.

There would be no effect on OHV use by removing approximately 17 miles of existing fence lines, primarily along the north and west boundary of the allotment during the next decade. OHV use is currently prohibited under an emergency closure within the boundaries of the Kelsey project area. Removal of the boundary fence line along the forest boundary would be expected to result in additional incursions onto National Forest lands from adjacent private lands.

There would be no OHV management or maintenance issues because there is no designated trail system. OHV use is currently unrestricted except for an emergency closure in the northwest portion of the allotment around the 1801 play area.

There would be no impacts to OHV developments. There are no designated trails or other improvements within the allotment boundaries.

There would be no range management or maintenance issues. Grazing would not be permitted in the allotment.

Cinder Hill and Pine Mountain Allotments

There would be an increase in risk of accidents between vehicles, including OHVs, and livestock in the Cinder Hill Allotment. The risk would increase when

1) pastures 1, 2, and 3 of the current Coyote Allotment are integrated into the Cinder Hill Allotment and new allotment boundary fences constructed; and
2) 2) a pasture/allotment boundary fence is constructed along the southwest side of pasture 3 of the Cinder Hill Allotment.

The number of livestock would increase from the current 266 to the full permitted stocking of 600 animals. Until the fences are constructed and stocking levels increased, the risk of vehicle/livestock accidents would remain the same.

The increase in livestock numbers would also increase the risk to riders on OHVs, especially during heavy use periods. All or portions of the five (5) existing Cinder Hill pastures also contain EFR OHV trails. May has historically been the time when OHV use is heaviest. The risk would be the least in pastures 1 and 2 as they have the least acreage within the EFR boundaries and the fewest miles of trail. Pasture 1 would remain closed to livestock until at least 2006 to protect trees planted after the Evans West fire in 1996. This would eliminate the

risk to riders until livestock were returned to the pasture. The risk would also be reduced by the use of a rest-rotation grazing system. This would also rest one or more pastures each year and eliminate the risk during the rest year for that pasture.

There would be no change in the risk of vehicle/livestock accidents in the Pine Mountain Allotment. There would be no change in the numbers of livestock permitted within the allotment. Construction of a new pasture boundary fence between the South and Coop pastures would have no effect on OHV use or riders. It would have no effect on the risk of accidents between livestock and vehicles, including OHVs.

OHV management issues and associated costs would increase. There are 29 OHV cattleguards associated with East Fort Rock in the Cinder Hill Allotment and five (5) in the Pine Mountain Allotment. One (1) new OHV cattleguard in the Cinder Hill Allotment would cost approximately $1,000 to install. Annual maintenance costs for 30 cattleguards would increase to approximately $1,500. Annual maintenance costs associated with livestock damage would be approximately $7,150. This includes approximately $2,260 for sign and fence repair and approximately $3,390 for trail tread repair.

Two (2) of the new water sets proposed in Trails pasture of the new Cinder Cone Allotment would be expected to reduce livestock associated damage at the 2510 staging area. The area is an old water set and livestock continue to congregate, rub signs and posters off the kiosk, and interfere with people trying to camp. The new water sets would pull livestock away from the staging area. Some livestock would be expected to continue to congregate at the staging area but in increasingly smaller numbers and with less consistency over time. This would reduce damage to signs, posters and other improvements and reduce interference with campers and OHV riders at the site. Impacts would be expected to be limited in duration and extent. Greatest impacts would be expected when the pasture was grazed early in the season (May 15 through June 15) when OHV use is greatest.

These same new water sets coupled with the proposed third new water set in the Trails pasture would also be expected to reduce livestock/human/OHV interactions at the Road 2500-800 water set and the Road 25 Staging Area. The Road 800 water set would remain but de-emphasized and livestock use limited. This would reduce or eliminate the creation of trails near the staging area and reduce the confusion amongst OHV riders trying to identify designated routes. It would also reduce the risk and potential for livestock/vehicle accidents and reduce harassment of livestock in the vicinity of the water set.

In the Pine Mountain Allotment, annual maintenance costs associated with livestock would be expected to cost approximately $250 for cattleguard repair. Only the Coop pasture is within the East Fort Rock OHV Trail System. There are no developed OHV facilities and there would be a much lower level of impacts to signs, posts, fences, and trail treads.

Establishment of additional water sets within the Cinder Hill Allotment would reduce livestock/OHV interactions and conflicts at the water set on Road 2500-800. The water set would be retained but use limited to minimize interactions between livestock and OHV riders and users of the Road 25 staging area. This would reduce or eliminate livestock congregating at the water set and affecting vehicle access to and use of the staging area. This would also reduce the number of cattle trails in the area and would reduce the confusion experienced by OHV riders trying to determine what are designated trails.

Impacts on OHV use by grazing would only change in the Coop pasture of the Pine Mountain Allotment. Costs to install four (4) new cattleguards in the pasture would be approximately $4,000. Annual maintenance costs would rise to approximately $450 for the nine (9) cattleguards. There would be no change in annual maintenance costs

associated with livestock damage. Only the Coop pasture is located within the EFR boundaries. There are no developed OHV facilities and fewer signs, fences and other improvements subject to damage by livestock in this pasture. Impacts on OHV use by grazing would not change in the remainder of the allotment. No new water sets are proposed.

CUMULATIVE EFFECTS

Coyote Allotment

The Kelsey Access Management Environmental Assessment proposes to implement a managed OHV trail system. It also proposes to close the project area to unrestricted off-highway vehicle use except on designated roads and trails. This would result in the construction and establishment of trails, trailheads, play areas, signs and kiosks, and other features associated with a designated trail system.

Trails would pass through existing fence lines in six (6) locations. OHV trail cattleguards would be installed if construction funds were adequate. If not, access through existing fence lines would be by removing strands of fence wire in the section traversed by the trail. Cattleguards would be installed and removed wire restored when the allotment again became active. Cattleguard installation would cost approximately $6,000. Yearly maintenance would cost approximately $300.

New fence construction to delineate the new East and West pastures would require an additional seven (7) new cattleguards to be installed. Installation would cost approximately $7,000. Annual maintenance would cost approximately $350. Costs of annual fence and sign repair would be approximately $850. These costs would only be incurred in the se pastures and only when they are grazed. These are the only pastures where fences would be retained and where cattle would be grazed in this allotment.

Implementation of a designated trail system in the Kelsey project area would result in approximately 750 riders moving from the EFR system (approximately five (5) percent of the EFR rider population). Effects on grazing would be limited to those pastures and times when grazing occurred.

Impacts would be more likely when sheep or goats were being used to achieve vegetation management or fuels reduction objectives in areas where trails or roads were designated for OHV use. Livestock blocking or damaging trails would be expected to be extremely limited because of the expected short duration of grazing (1-2 days) before being moved on. The lack of permanent fencing would increase the risk of the flock being dispersed by OHV use but the presence of on-site herders or herding animals (dogs, etc.) would minimize the risk. Informational signing and appropriate contract/permit language would further reduce conflicts and impacts.

Cinder Cone (Hill) Allotment

Road 2500-800 and Road 2510 are proposed to be improved by placing new gravel on the road surface. Road 800 would be graveled from the staging area to the junction with Road 25 and would pass the water set between the junction and staging area. Graveling the road would reduce dust, reduce road maintenance, improve water haul by the permittee to the water set, and increase the use of the staging area. It would increase the potential of conflicts between livestock and vehicles and OHV use when the water set was used. Livestock use of the water set would impact the integrity of the gravel surface by moving gravel off the road. New water sets would limit the use of this particular water set and would be expected to reduce conflicts and impacts.

Road 2510 would be graveled from Road 25 to the Road 2510 Staging Area. This road is not currently used for water haul; there would be no beneficial effect to the permittee. Road 2510 is a Shared Use Road and a better surface could increase vehicle speeds on the road which could increase risks to public safety when the allotment is active. The increase in risk would be negligible because of the straight

alignment and good sight distance on this road segment of the road.

Approximately six and six tenths (6.6) miles of system road would be signed as shared use roads (SUR) for OHV use. Approximately one and one tenth (1.1) miles would be located within pasture 2 and five and one half (5.5) miles within pasture 5. These roads would provide legal access from dispersed camps to the nearest designated OHV road or trail.

Two roads, Road 2500-800 and 810, would potentially increase vehicle use through the Road 800 water set. This would potentially increase the risk of more encounters between vehicles and livestock when the water set is being used. It would also potentially increase the potential for disturbance and herding of livestock using the water set. Designating these roads as shared use would not be impacted by establishing new water sets elsewhere in the allotment.

The water set on Road 2510-340 is also a primary dispersed camp when the pasture is not active. Road 340 would also become a SUR from the water set/camp east to Trail 50. Since this camp is not active when the pasture is active, this road should have no effect on cattle use or permittee vehicle use.

Roads 2510-100, 2510-150, and 1800-650 will also become SURs to facilitate the east-west flow of OHV traffic from the vicinity of the Road 2510 Staging Area to the vicinity of the Camp II Trailhead. There are two water sets along these road segments and Road 650 provides access to a third. When the water sets are active, there would be potential for more vehicle encounters with cows, for disturbance/herding of cows at the water sets, and for congestion and safety issues with water trucks. The increase of traffic on these roads would also increase the need and cost for road maintenance.

Approximately three and eight tenths (3.8) miles of existing OHV trails are proposed for relocation in pastures 5 and 3. In pasture 5, approximately two and two tenths (2.2) miles of Trail 60 is proposed for relocation to make the trail easier to maintain and provide a better riding experience. There would be no change in effects on this alternative.

In pasture 3, one and six tenths (1.6) miles of Trail 25 are proposed for relocation. The trail would be moved away from a pasture fence. It would reduce the potential for encountering livestock trailing along the fence line.

The Bend-Fort Rock Ranger District is proposing an environmental assessment to address access and facility needs within the East Fort Rock OHV Trail System. It proposes to expand the useable space within the Road 25 Staging Area which would potentially increase the traffic past the water set on Road 800. This would further increase the risk of more encounters between vehicles and livestock when the allotment and water set are active. It would further increase the potential for disturbance and herding of livestock using the water set. It would also increase safety concerns and congestion associated with water trucks and recreational traffic.

The EA also proposes to address the need for additional trails and Shared Use Roads to provide legal camp access and to facilitate the flow and dispersal of OHVs through East Fort Rock. This would also increase the risk of more encounters between livestock and vehicles. It would also increase safety concerns and congestion.

Over the past 10 years, use at EFR has risen from approximately 5,000 visitors per year to approximately 15,000, an increase of approximately 12percent per year. This has been in conjunction with an ever-increasing population and continuing growth in OHV sales. Continued increasing use would be expected to result in:

- increased risk of conflicts between livestock and other forest users at water sets and at dispersed and developed recreational sites;
- increased costs associated with livestock damaging recreational facilities and improvements;

- increased potential for vehicle accidents between water trucks and other recreational vehicles including OHVs;
- increasing potential of harassment of livestock by OHVs; and
- increasing potential for damage to range improvements such as fences.

These impacts would be expected to be limited in location, duration and intensity.

Implementation of a designated trail system in the Kelsey project area would result in approximately 750 riders moving from the EFR system (approximately five (5) percent of the EFR rider population). There would be a decrease in vehicle traffic to and within the EFR area including the Cinder Hill Allotment. A decrease in the risk of encounters between livestock and vehicles, including OHVs, would be expected. The reduction would be small given the projected decrease in riders in EFR. It would likely be overshadowed or hidden in the increasing use figures associated with EFR.

The Opine Vegetation Management Environmental Assessment proposes to close those areas currently open to unrestricted off-highway vehicle use and require OHVs to use designated roads and trails. This proposal would have no effect on grazing under this alternative. That portion of the Cinder Hill Allotment within the Opine project area boundaries is also located within the boundaries of the EFR OHV Trail System. Travel by OHVs is currently prohibited except on designated roads and trails within the boundaries of the EFR trail system.

This alternative would have the same effects on OHV activities within the Fuzzy project area and outside of the EFR boundaries as Alternative 1. There would be some increase in risk of vehicle/livestock conflicts because stocking of livestock would be restored to permitted numbers when at least five pastures were available to be grazed. The increase would be small as there is no designated trail system nor are there developed OHV facilities located in this area. Risks would be greatest in active pastures. One or more pastures would be rested each year and thereby eliminate the risk in those areas. Timing of grazing within each pasture would vary each year further reducing the risk.

Increasing OHV use would be expected to result in increasing use of water sets by OHV riders and dispersed campers. This would increase conflicts between those users and livestock. It would also likely result in gradual expansion of compacted soils and damaged or destroyed vegetation around water sets.

Impacts associated with proposed fence lines and water sets within the EFR boundary in the Fuzzy project area are described above. There are no designated OHV routes within the Fuzzy project area and outside of the EFR boundaries. The allotment is currently active except for pastures 1 and 3 that are closed due to the Skeleton Fire and the lack of a boundary fence respectively.

The Prineville District of the Bureau of Land Management (BLM) is studying OHV use in their Upper Deschutes environmental impact statement due for release in late 2003. It proposes a managed OHV trail system of some type in the Cline Buttes area west of Redmond, Oregon, approximately 15 air miles northwest of Bend. Development of this area would have no effect on grazing or OHV use within the Cinder Hill project area. The Cline Buttes area would be primarily used during the winter when EFR is generally closed by snow. It is not projected to draw additional new users.

The BLM is also evaluating OHV use in the Millican area immediately adjacent to both Cinder Hill and Pine Mountain Allotments. The South Millican OHV area is currently closed to OHV use between December 1 and July 31. The Upper Deschutes Management Plan/EIS proposes to terminate the closure but reduce the number of trails within the area. This would have little or no measurable impact on grazing in the Cinder Cone Allotment.

Pine Mountain Allotment

The Opine Vegetation Management Environmental Assessment proposes to close those areas currently open to unrestricted off-highway vehicle use and require OHVs to use designated roads and trails. It would close the remaining three (3) pastures (Pine, Micro and South) to off-highway vehicle use except on designated roads and trails. The Coop pasture is located within the EFR trail system and OHV use is currently restricted to designated roads and trails.

OHV use on Pine Mountain is limited by terrain, a relative lack of access by trails or roads, and dense stands of timber. These factors also serve to limit impacts of grazing on OHV use. Restricting use to designated roads and trails would further reduce impacts. The need/desire to cut fences would be eliminated because OHV cattleguards would be used where designated trails intersect fence lines. The potential for accidents between water trucks and OHVs would be reduced because of improved informational and regulatory signing. Water sets near designated trails would be fenced to limit contact and conflicts between livestock and OHV users. The risk of harassment to livestock by OHV use would be reduced but not eliminated by limiting the area (designated roads and trails) where livestock and OHVs would be likely to interact.

The Opine Access Management Environmental Assessment proposes to close approximately 25 miles of system roads and designate portions of other roads as shared use for use as OHV travel routes. Road closures would occur across the Opine project area (approximately the east half of the Cinder Hill Allotment and all of the Pine Mountain Allotment).

The Opine Access Management EA also proposes to construct additional OHV trails to provide connections and loops on Pine Mountain. User created routes would be closed and rehabilitated. Five (5) new cattleguards would be needed. The new OHV routes would be located on Pine Mountain. They would connect to but not be part of the EFR system.

Effects on grazing from implementation of the Opine Access Management EA would include the following:

- damage to fences resulting from OHV users cutting fences would be eliminated because five (5) new cattleguards would be constructed where designated trails intersect fence lines;
- the potential for accidents between water trucks and OHVs would be reduced because of improved informational and regulatory signing;
- the risk of harassment to livestock by OHV use would be reduced but not eliminated by limiting the area (designated roads and trails) where livestock and OHVs would be likely to interact;
- construction of new cattleguards would cost approximately $5,000 with an estimated annual maintenance cost of approximately $250;
- three new (3) cattleguards would replace three (3) existing gates reducing the risk of gates being left open and livestock trespassing into adjacent pastures; and
- grazing-related sign, fence, and tread maintenance would cost approximately $850 per year.

OHV routes would be located to minimize impacts to water sets and livestock. Use of enclosures to contain livestock would be used in some sites to further minimize contacts and conflicts between livestock and OHV riders.

Some increase in the risk of vehicle accidents between OHVs and water trucks or other vehicles associated with grazing operations would be expected. This would only be expected on Road 2017 on the segment between the 100 and 400 junctions. Non-street legal OHV use is currently prohibited on Road 2017 between the forest boundary and Pine Mountain Observatory. Use of non-street legal OHVs is permitted on Road 2017 from just south

of the observatory to the Road 2017/Road 23 junction and all other maintenance class 1 and 2 roads on Pine Mountain.

Establishing a managed trail system on Pine Mountain would be expected to increase use by an estimated 10-15percent or approximately one to two riders per weekend day. There are currently six to twelve riders using Pine Mountain on a weekend day. Managing this proposed system would require signing and maps; actions which tend to draw attention and additional riders.

Impacts to grazing operations and livestock would be expected to increase. Use at the EFR system has increased from approximately 5,000 visitors in 199* when it was created to approximately 15,000 today, an annual increase of approximately 12percent per year. Increasing population and the growth in OHV sales is expected to result in a continuing increase in the number visitors. This would result in an increase in the potential for conflicts between those users and livestock and grazing operations. More water sets would be used for camping and staging areas. This could displace livestock and could result in relocation of the water set. Based on use patterns of popular dispersed sites, including old water set locations, loss of vegetation and expansion of detrimentally impacted soil areas would be expected.

Other impacts that would be expected include:

- an increase in the risk of vehicle accidents between water trucks and recreational vehicles and OHVs; and
- an increase in harassment of livestock.

Damage to trails and recreational improvements would also be expected to increase if there are increases in the number and distribution of developed facilities including trails and staging areas. Increasing recreational use and demand would be expected to result in increased damage to grazing improvements, particularly fences. Maintenance and repair costs for facilities and improvements, for both the grazing permittee and the district range and OHV programs, would also be expected to increase.

Implementation of a managed OHV trail system in the Kelsey project area would be expected to result in a shift of up to five (5) percent of the users at the EFR trail systems or a maximum of approximately 750 riders. It is expected that these would be predominately local users; i.e. users from Bend or nearby communities. Use would be concentrated to the designated roads and trails and eliminated from other areas. This shift would be expected to have little or no additional impact on grazing or livestock across the Cinder Hill project area

The Prineville District of the BLM is studying OHV use as part of their Upper Deschutes environmental impact statement with a draft due out late this year. A managed trail system is proposed in the Cline Buttes area west of Redmond, OR, approximately 15 air miles northwest of Bend This would have little or no impact on grazing in the Cinder Hill area. Use at the Cline Buttes site would primarily occur during the winter months when most of the Cinder Hill area is closed by snow and not being grazed.

The BLM is also evaluating OHV use in the Millican area immediately adjacent to both Cinder Hill and Pine Mountain Allotments. The South Millican OHV area is currently closed to OHV use between December 1 and July 31. The Upper Deschutes Management Plan/EIS proposes to terminate the closure but reduce the number of trails within the area. This would have little or no measurable impact on grazing in the Cinder Hill project area.

Over a 10-year period, this alternative would cost the OHV program $81,000 in grazing related expenses for East Fort Rock. If Kelsey and Opine OHV projects are implemented, total OHV program expenses would increase to approximately $125,500, an increase of approximately $44,500.

ALTERNATIVE 3 – NO GRAZING

DIRECT AND INDIRECT EFFECTS

All three allotments would be terminated and the permittees allowed up to two (2) years to terminate operations and remove their improvements, primarily water tanks. Risks to public safety associated with livestock on roads and trails would continue until the livestock were removed. These risks would be eliminated within two (2) years or when livestock were removed.

Fence lines in the Coyote Allotment would continue to deteriorate and continue to pose risks to OHV riders. Risks would be eliminated upon removal of the fences. Fences are owned by the Government; removal would depend upon budgets and personnel. Approximately 27 miles of existing fences would be removed and approximately 11 miles along the forest boundary would be retained. Retention of fences along the forest boundary would not affect OHV use. These fences would continue to be maintained by either the adjacent landowner or permittee. The Bureau of Land Management (BLM) is the adjacent landowner and OHV use is limited to designated routes. There are no connecting trails across the property line.

Fences in the Cinder Hill and Pine Mountain Allotments outside the EFR area would pose little or no risk to OHV riders until they begin to deteriorate due to the lack of maintenance, estimated to be within five to ten (5-10) years. Fences are owned by the Government; removal would depend on budgets and personnel. Approximately 42 miles of existing fence would be removed; 28 miles along the forest boundary would be retained including approximately 11 miles along the boundary of the EFR trail system area. Retention of fences along the forest boundary would not affect OHV use. These fences would continue to be maintained by either the adjacent landowner or permittee. The Bureau of Land Management (BLM) is the dominant adjacent landowner with scattered parcels of private land intermixed along the boundary. Most of the BLM land along the north boundary is within the Millican Valley OHV Trail System and use is limited to designate routes. There are no designated connecting trails between those BLM lands and Forest Service lands to the south.

East and south of Pine Mountain, BLM lands are open to unrestricted OHV use. There are more scattered parcels of private lands interspersed with BLM managed lands. The Federal Government has neither easements nor rights-of-way across private lands. There are no connecting routes between BLM and Forest Service lands. Legal OHV access between BLM and Forest Service managed lands is limited to roads with gates or cattleguards due to the presence of fences. This would not change. Without the deteriorating fence lines, OHV rider safety would potentially increase.

Removing existing fences within the EFR area would have no effect on OHV riders. Riders are restricted to designated trails and roads. OHV cattleguards provide access through fences where designated trails and roads intersect fences.

Twenty-nine (29) existing OHV cattleguards in the EFR area, 25 in the Cinder Hill Allotment and four (4) in the Pine Mountain Allotment, would be removed. There are no OHV cattleguards in areas outside of the EFR system; there would be no additional charges for removal. Removal of OHV cattleguards would reduce repair and maintenance costs approximately $300-500 per year (assuming between six and ten would require repair or maintenance at a cost of $50/cattleguard).

Removing livestock from within the EFR area would:

- eliminate damage to OHV signs and posts;
- reduce braiding of OHV trails;
- eliminate the creation of new trails that confuse riders; and
- eliminate the re-opening of old trails.

Costs associated with sign and post repair and maintenance would decline by approximately $1,000 per year. Costs associated with the repair of braided trails, closing new cow trails and re-closing old trails would be expected to decline approximately $1,500 per year.

Conflicts between livestock and OHV riders and dispersed campers would be eliminated. Seventy (70) water sets would be closed. If subsoiled or closed to revegetate naturally, these sites would also be unavailable for dispersed camping and use as OHV staging areas.

Removal of livestock from pastures outside the EFR area, primarily all of the Coyote and three (3) pastures of the Pine Mountain Allotment, would have no effect on OHV facilities or improvements. There are no facilities, designated routes or improvements in those areas.

Vandalism of water tanks, fences and other range improvements would be eliminated in all allotments because those improvements would be removed. Chasing, herding or other harassment of livestock by vehicles would also be eliminated. The risk of vehicle accidents between water trucks and recreational vehicles, including OHVs, on roads would be eliminated. There would be no escape of livestock from pastures when gates were left open; gates would be removed with the fences.

CUMULATIVE EFFECTS

Implementation of a designated trail system as proposed under the Kelsey and Opine Access EAs would be minimally impacted by this alternative. If fences were removed prior to establishment of the trail system, no OHV cattleguards would be required. If the trail system were established prior to removal of the existing fences, it is likely that cattleguards would not be placed. Fence wire would be cut and removed or rolled and stored by the fence posts adjacent to the trail. There would no effect on rider safety as riders would be required to remain on designated routes.

The Kelsey Access EA would also designate the Kelsey area as closed to OHV use unless posted open. OHV routes, including roads, would be designated and riders required to stay on those routes. This alternative would have no effect on that action. No grazing would be permitted.

The Opine Vegetation Management EA proposes a similar action. It would affect only three (3) pastures in the Pine Mountain Allotment: South, Micro, and Pine. The Coop pasture and the all the pastures in the Cinder Hill Allotment are located within the boundaries of the EFR OHV Trail System where OHV use is restricted to designated routes. This alternative would have no effect on that action. No grazing would be permitted.

There would be no maintenance costs associated with livestock damage on signs, posts or other improvements. There would be no livestock related trail tread maintenance costs.

Compared to Alternatives 1 & 4, this would save $6,000 and $300 per year in OHV cattleguard costs and $850 per year in trail rehab and sign costs. Compared to Alternative 2, this would save $13,000 and $650 per year in OHV cattleguard costs and $850 per year in trail rehab and sign costs.

This alternative would have minimal effect on the proposed graveling of roads or designation of approximately six and six tenths (6.6) miles of system roads as shared use roads within the EFR area. There would continue to be conflicts between livestock and vehicles on the 2500-800 road at and near the water set. Livestock would continue to create new paths approaching that water set. Livestock would also affect the integrity of the gravel surface. These impacts would be expected only until the livestock were removed from the allotment, a maximum of two years.

The risk of accidents between water trucks and recreational vehicles, including OHVs, on roads and between livestock and vehicles, including OHVs, on roads and trails would continue until livestock were removed. This would be two years at the most.

This alternative would have no effect on proposed OHV facility and trail development within the EFR area. A decision is expected in late 2004 or 2005 with implementation expected in 2005. Grazing would be

expected to be terminated prior to or near the expected implementation of this project.

ALTERNATIVE 4 – GRADUAL GRAZING REDUCTION

DIRECT AND INDIRECT EFFECTS

Effects for the western portion of the Coyote Allotment would be the same as those described previously under Alternative 3.

Effects for the Cinder Cone and Pine Mountain Allotments would be the same as those described previously under Alternative 2.

CUMULATIVE EFFECTS

Effects for the western portion of the Coyote Allotment would be the same as those described previously under Alternative 3.

Effects for the Cinder Cone and Pine Mountain Allotments would be the same as those described previously under Alternative 2.

Alternative Comparison

Table 14 compares estimated OHV maintenance costs associated with grazing activities under each alternative for the next 10 year period.

Table 14 Estimated 10-year Grazing Related OHV Costs by Alternative

	Alt 1	Alt 2	Alt 3	Alt 4
Est. Costs ($)	58,000	125,500	0	97,000

PRIME LANDS

There are no lands within the planning area that are classified as prime farm or rangelands. Proposed activities in Alternatives 1, 2, or 4 would not change areas classified as prime forestland. There would be no direct, indirect, or cumulative adverse effects to these resources. Therefore, they are in compliance with the Farmland Protection Act and Departmental Regulation 9500-3, “Land Use Policy.”

CIVIL RIGHTS AND ENVIRONMENTAL JUSTICE

The issue of environmental equity and justice in natural resource allocation and decision making is receiving increasing political and social attention. Executive Order 12898 (Federal Register, February 1994) requires that all federal land management agencies address environmental justice in nonwhite and/or low-income populations with the goal of achieving environmental protection for all communities regardless of their racial and economic composition.

No alternative analyzed in this assessment would result in a disportionate impact to low-imcome or minority populations. The action alternatives provide opportunities for local ranchers, and ultimately, to all groups, regardless of racial and economic composition.

COMPLIANCE WITH STATE AND LOCAL LAWS

Implementation of any of the alternatives would be consistent with State and local laws, land use policies, and environmental policies.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

None of the alternatives would not be expected to create any impacts that would cause irreversible damage to any resource values.

There is low risk for the proposed actions to cause soil mass failures (landslides) because there are no seeps, springs or seasonally wet soils on steep slopes. The planned locations for structural developments (e.g., fences, cattle guards) do not meet criteria for landslide prone terrain.

No known heritage resource sites would be damaged or destroyed by grazing, construction, reconstruction, maintenance, or removal of range improvements. Unknown sites would be protected by

project monitoring and use of appropriate contract and permit requirements.

Impacts to PETS species would be non-existent or limited in scope, duration, and intensity. Grazing management practices, such as water set location and utilization monitoring, would limit impacts to sage grouse.

Soils dedicated to management facilities, such as water developments, the transportation system and cattleguards, are considered an irretrievable loss of soil productivity until their functions have been served and disturbed sites are returned back to a productive capacity. Under the action alternatives, the amount of land dedicated to structural improvements would be limited to the minimum necessary for management needs. Under all alternatives, the cumulative amount of detrimentally disturbed soil from all management facilities would remain well within allowable LRMP standards and guidelines.

CHAPTER 4 LIST OF PREPARERS

This section identifies the Forest Service personnel who participated in the analysis and the preparation of the EA.

Interdisciplinary Team Members

Don Sargent – Team Leader, Range Specialist
John R. Davis – Writer/Editor
Monty Gregg – Wildlife Biologist
Dick Dufuord – OHV Specialist
Charmane Levack – Ecologist/Botanist
Lucy Hamilton – Archeologist
Connie Rawson - GIS
Rod Jorgensen – Soils

CHAPTER 5 LIST OF AGENCIES AND PERSONS CONSULTED

This section identifies agencies and individuals who assisted in the development and planning of this EA.

Glen Ardt, Regional Habitat Biologist, Oregon Department of Fish and Wildlife, Bend, OR.

Stephen Roth, Permittee, Pine Mountain Allotment, Christmas Valley, OR.

Keith and Janet Nash, Permittee, Cinder Hill Allotment, Bend, OR.

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