

**ENVIRONMENTAL ASSESSMENT**

**for the**

***ANDERSON WEST LANDSCAPE MANAGEMENT PROJECT***

(EA# OR110-2003-17)

U.S. DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
MEDFORD DISTRICT  
GRANTS PASS RESOURCE AREA

May 2003

Dear Reader:

We appreciate your interest in the BLM's public land management activities. We also appreciate your taking the time to review this environmental assessment (EA).

The BLM began planning the Anderson West project with project scoping in April 2000. You may have sent us comments at that time. We have developed the current proposals after a careful consideration of resource conditions in the project area and the management direction that is set forth in the Medford District Resource Management Plan (RMP) for the lands involved. The Anderson West project addresses a broad range of resource conditions in the project area. It includes proposals for a range of different forest management activities which focus on maintaining or improving resource and forest conditions in the project area while meeting other resource management objectives. This project is one of many that implements the RMP.

We were well along with project planning when the Biscuit Fire occurred last year. Part of the project area is immediately adjacent to the fire area. During the last few months we have reviewed our proposals in light of the changes that resulted from the fire. We were concerned about the potential cumulative effect of the Anderson West project with the post fire conditions. We believe that the proposals are compatible with the post-fire conditions in the watershed.

If you would like to provide us with written comments regarding this project or EA, please send them to me at 3040 Biddle Road, Medford, OR 97504 or email them to [or110mb@or.blm.gov](mailto:or110mb@or.blm.gov). If you would like to comment, but confidentiality is of concern to you, please be aware that comments, including names and addresses of respondents, will be available for public review or may be held in a file available for public inspection and review. Individual respondents may request confidentiality. If you wish to withhold your name or street address from public review or from disclosure under the Freedom of Information Act, you must state this clearly at the beginning of your written comment. We will honor such requests to the extent allowed by law. All submissions from organizations or officials of organizations or businesses will be made available for public inspection in their entirety.

Thank you for your interest in this project.

Abbie Jossie  
Field Manager  
Grants Pass Resource Area

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
MEDFORD DISTRICT

EA COVER SHEET

RESOURCE AREA: Grants Pass Resource Area

EA # OR-110-2003-17

ACTION/TITLE: Anderson West Landscape Management Project

LOCATION: T37S, R8W, Sec. 25, 34, 35 and T38S, R8W, Sec. 3, 4, 9, 15, 23

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# Chapter 1

## Purpose of and Need for Action

### A. Introduction

The purpose of this environmental assessment (EA) is to assist in the decision making process by assessing the environmental and human affects resulting from implementing the proposed project and/or alternatives. This EA will also assist in determining if an environmental impact statement (EIS) needs to be prepared or if a finding of no significant impacts (FONSI) is appropriate.

This EA tiers to the following documents:

- (1) the Final EIS and Record of Decision dated June 1995 for the Medford District Resource Management Plan (October 1994);
- (2) the Final Supplemental EIS on Management of Habitat for Late-Successional and Old-Growth Forest Related Species within the Range of the Northern Spotted Owl (February 1994);
- (3) the Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl and its attachment A entitled the Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl (April 13, 1994) (also referred to as the Northwest Forest Plan (NFP));
- (4) the Medford District Noxious Weed Environmental Assessment (April 1998); and
- (5) the Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines (January 2001).

In addition to the documents cited and tiered to the above, the planning of this project drew from the ideas, information and recommendations in the following:

- (1) Deer Creek Watershed Analysis (BLM, November 1997).
- (2) Deer Creek Ranch Grazing Assessment (BLM 2003).

Planning for this project began in 1997 and was almost completed in early 2002. In the summer of 2002 during fire suppression work on the Biscuit fire a small portion of the project area in Sections 4 and 9 was burned with a low severity burn during backfiring. The upper reaches of Squaw Creek, which flows through the project area, was burned with greater severity. The Biscuit Fire extensively burned portions of the Illinois River basin to which Deer Creek and the project area are tributary. Some adjustments to the project proposals were made due to the changed conditions. Further evaluation of the potential environmental consequences of the project proposals has also been done.

### B. Purpose of and Need for the Proposal

The broad purpose of the proposed action is to implement the Medford District's Resource Management Plan (RMP). The proposed action is designed to meet a variety of resource and human (social/economic) needs and objectives outlined in the RMP. These include:

- Management of the watershed in a manner that will provide for and promote a wide variety of non commodity outputs and conditions including wildlife habitats, sustainable forest conditions, recreation opportunities, maintenance or improvement of water quality, and fisheries;

- Contribution to the Medford District's timber harvest / forest products commitment to help meet the demand for wood products both regionally and nationally and to support local and regional economies.

During project planning, assessments of site specific conditions are made and evaluated in terms of these broader objectives. These conditions then defined the purpose and need for individual treatment proposals. They are noted in the objectives for proposals in Chapter 2 and the affected environment discussions in Chapter 3.

### **C. Project Location**

The general location of the proposed project is shown on Map 1: Project Area Map. (All maps are located in Appendix A.)

### **D. Issues and Concerns Relevant to the Project**

A variety of issues and concerns were raised during the initial scoping of this project. These were raised by interested individuals or groups outside of the BLM, by the BLM's project planning and interdisciplinary (ID) teams. For the purposes of this document, an "Issue" is something that is *unique* to the project area that may need to be given particular consideration and which may contribute to defining a particular action alternative.

The issues identified as pertinent to the project are listed below. Some of these issues are taken from the Deer Creek Watershed Analysis and were used in the design of the project's proposed alternatives. In some cases, an issue was considered at the onset by the planning team and then eliminated from further consideration because it was not judged something that was within the scope of this project or proposed action(s). These are summarized in Appendix D. The pertinent issues identified for this project are:

1. Habitat for the northern spotted owl, a species listed as threatened under the ESA, is present in the project area. This habitat also contributes to the connectivity for late-successional forest species between the Williams/Deer LSR and LSRs to the north. The area also provides big game (deer and elk) thermal cover.
2. Poor stocking of healthy vigorous regeneration in the understory and a declining overstory are resulting in slower annual tree growth in Section 3, portions of unit 001.
3. High stand densities throughout the project area are resulting in growth stagnation in some stands. This in turn slows seral stage progression/succession.
4. Over 100 acres of young stands have been identified in the project area as being overstocked and having the potential for rapid growth after release.
5. The project area has an overall moderately high fire hazard rating due . This is due to increasing understory densities which are more susceptible to stand replacement fires and to the exclusion of fire from these stands for over 80 years. Stand densities are outside the range of natural conditions shifting them from moderate severity fire to high severity large scale wildland fires potential.
6. Survival and production of coho in the project area is limited by poor quality over-wintering

habitat.

7. Dispersed recreational use in the area is generally associated with the areas of older forests, especially in section 3. Recreation activities are mainly horse and hiking use of a network of informal trails. OHV recreational use occurs in section 23.
8. The project area has numerous special status plant species including species associated with late-successional forest and serpentine soils. A portion of the project area (T38S-R8W-Sec 9, 15 and 23) is located within the RMP designated Illinois Valley Botanical Emphasis Area.
9. The project area is adjacent to a Forest Service's designated Squaw Mountain roadless area (7,932 acres). Most of this FS designated roadless area burned in 2002 in the Biscuit Fire.
10. The Deer Creek Ranch grazing allotment encompasses 1,165 acres of BLM land in Sections 3, 4, and 9 of T.38S., R.8W. Grazing is not currently occurring and the permit / lease is vacant.
11. The project area includes a portion of the Eight Dollar Mountain ACEC.
12. The Biscuit Fire of 2002 burned a portion of the project area and a large portion of the Illinois River watershed.

#### **E. Land Use Allocation Objectives**

Land Use Allocations (LUA's) are set by the NFP and RMP. The reader is referred to these documents for a discussion of the relevant objectives. The Anderson West project area includes land in the Matrix (southern General Forest Management Area), Riparian Reserve and Special Area (Area of Critical Environmental Concerns (ACEC)) land allocations.

## **Chapter 2**

### **Proposed Action and Alternatives**

#### **A. Introduction**

This chapter describes the proposed action and alternatives that are addressed and analyzed in this EA.

#### **B. Alternative 1: The No Action Alternative**

In this EA document the "no-action" alternative is defined as not implementing any aspect of the proposed action alternative(s). Defined this way, the no action alternative also serves as a baseline or reference point for evaluating the environmental effects of the action alternatives. Inclusion of this alternative is done without regard as to whether or not it is consistent with the Medford District RMP.

The no action alternative is not a "static" alternative. Implicit in it is a continuation of the environmental conditions and trends that currently exist in the project area. This includes trends such as vegetation succession and consequent wildlife habitat changes, road condition / deterioration, rates of erosion, continuation of current road densities, trends in fire hazard changes, OHV use, *etc.*.

#### **C. Alternatives 2 and 3: Proposed Action Alternatives**

##### **1. Introduction**

Two action alternatives are proposed and analyzed. There are many elements common to both. They differ with regard to proposed treatments of older seral stage forest stands.

Alternative 2 proposes thinning regimes and structural retention prescriptions that provide a greater emphasis on long term tree and stand growth rates of the residual stands. There is a lower emphasis on late-successional forest connectivity and thermal cover than that of Alternative 3. Alternative 3 proposes thinning regimes that retain higher residual stand canopy closures and thus provides a greater emphasis on retaining connectivity and thermal cover for deer species. There is a lower emphasis on optimizing long term residual tree and stand growth rates than occurs in Alternative 2.

In the process of designing the two action alternatives, a host of other options or alternatives were considered. The combination of options presented in the alternatives reflect what the interdisciplinary planning team believed would best provide for, and balance, the competing resource management objectives.

The descriptions of each of the action alternative are organized and presented based on broad "types of action" (*e.g.*, road actions, riparian restoration / treatments, fisheries enhancement, vegetation treatments, recreation related proposals, *etc.*). While presented in these discrete groupings, the interrelationships between them must be kept in mind, particularly when considering the overall effects of the alternatives.

##### **2. Proposed Action: Recreation (common to Alternatives 2 and 3)**

###### **a) Objectives**

Maintain the existing informal trails in a condition so that current types and levels of use can continue. One feature of the area is an existing sub-grade of an old, overgrown mining road and mining ditch

located within Sections 3 and 4, T38S,R8W. It is occasionally used by local horseback riders and hikers for recreation.

b) Proposed Action

Treads of the existing trails would be kept clear of logging slash and hand piles. Trees would be directionally felled away from the ditch or trail. The integrity of the ditch or trail would be protected by minimizing the disturbance from tractor skid trails.

A 70 foot length of the trail in SW1/4 of the NE 1/4 of Section 3 would be improved by rerouting the tread to a slightly higher location in order to reduce sedimentation into the adjacent intermittent stream channel. Water bars will be constructed to disperse runoff and further reduce sediment delivery. Slash will be placed on the old section of trail to route users to the new trail.

**3. Proposed Action: Riparian Reserve Treatments (common to Alter. 2 and 3)**

Riparian reserves provide habitat and connectivity corridors for wildlife and fish and contribute to proper stream functioning. Riparian reserve widths would conform with the interim widths prescribed in the NFP (p. C-30). Table 2-1 indicates the applicable riparian reserve widths for this project.

Table 2-1: Riparian Reserve Widths		
Stream Type	Site potential Class	Riparian Reserve Width** (ft)
Fish bearing stream	IV	the greater of 300 ft. or 2 site potential tree heights
Non-fish bearing perennial	IV	the greater of 150 ft. or 1 site potential tree height
Non-fish bearing intermittent	IV	the greater of 100 ft. or 1 site potential tree height

\*\* Widths are determined in accordance with BLM Instruction Memo OR-95-075 (3/30/95).

Unstable and potentially unstable areas (areas showing active movement and indications of past movement) are treated as riparian reserves (NFP, pp. C30, C31). This is to maintain or improve root strength on these sites.

Fish bearing streams in the project area are shown on the maps (Appendix A).

a) Treatment Objectives

Treatment objectives for forest stands within the riparian reserves are to:

- Promote the long term Aquatic Conservation Strategy (ACS) objectives; accelerate reaching the ACS goals; and remedy conditions that are preventing attainment of the ACS.
- Accelerate the successional rate of early seral riparian reserve vegetation.
- Increase the potential for long term recruitment of large snags and coarse wood within the stream channels.
- Maintain existing shade.

b) Proposed Treatments

Vegetation treatments would be implemented within some areas of the riparian reserves. In some cases, where conditions are improving naturally, a specific no-treatment prescription may be most appropriate. Identification of potential treatment sites would be based on the stand / vegetation conditions existing at the local site and an assessment of the potential for promoting ACS objectives through active management. This would be done during project layout / implementation. In all cases, a no treatment area adjacent to the stream would be maintained. Table 2-2 indicates the width of the no-treatment zone. No young stand thinning or fuel reduction treatments would be conducted within these zones. Zone widths are based on stream type and will be implemented to minimize reduction of vegetation shading of the stream and to prevent the delivery of sediment to the stream.

Stream description*	Applicable treatments	The proposed treatment within riparian reserve.
Fish bearing streams, perennial non-fish bearing streams and springs	Precommercial thinning (PCT), brushing (BR) and understory thinning (UT)	No vegetation treatment within 50 feet of the stream channel.
Intermittent non-fish bearing	PCT, BR, and UT.	No vegetation treatment within 25 feet of the stream channel except for cutting of brush species and tan oak. (Big leaf maple, dogwood, and elderberry and all conifers would be reserved from cutting.)
All streams and springs (except domestic sources)	Mechanical thinning and chipping with the mechanical slashbuster.	No slash busting treatment within 50 feet of the stream channel. The slashbuster machine treads would be kept 75 feet from channel.
	Underburning	Burning within 50 feet of the stream channel would take place only as a backing burn (no direct ignition). The existing fuel profile and vegetation density would be maintained within 50 feet of the channel.
	Slash piling / burning	No creating or burning of slash piles within 50 feet of the stream channel.
Domestic water source spring (Sec 3)	All	No treatment within the full riparian reserve.
Identified wildlife water source (springs)	All	No treatment within the full riparian reserve around the spring.
*Perennial fish bearing, intermittent fish bearing, were formally known as class 1 or 2; perennial non fish bearing was formally known as class 3; intermittent non fish bearing was formally known as class 4		

Vegetation treatments in riparian reserves would be limited to thinning, brushing, and slash burning of understory vegetation. There would be no cutting or removal of trees greater than 12" DBH. Trees which are between 8-12" DBH would not be felled within 75' of a perennial stream. Snag and down wood component criteria would be met in the riparian reserve by felling and leaving trees up to 12" DBH or by girdling trees of different size classes to create snags that will fall naturally. An average of 240 lineal feet of down wood per acre and 3 snags per acre within the treated riparian reserve is the goal. To reduce potential fuel loadings and fuel treatment needs and to provide some forest products, trees smaller than 12" DBH may be removed from the riparian area after snag and down wood target levels are met. Any trees to be removed from the riparian reserves would be felled toward pre-existing roads or skid trails and would be bull-lined.

With the exception of paved roads, all roads or skid trails used for access through a riparian reserve will be decommissioned following use. Only designated skid trails will be used in the riparian reserves. Skid trail selection and designation for use would be limited to those that have not recovered from previous use and which would benefit from decommissioning and restoration.

Within unstable areas where there is active soil movement (e.g., slip planes, step benches, recent debris flows or debris slides) there will be no vegetative treatment. Within areas with indications of past movement that are potentially unstable, some vegetative treatment may occur where long term root strength can be maintained or increased. This would include pre-commercial thinning, hand piling and slash burning.

Low intensity underburns in the riparian reserve may extend into the no treatment zones. This is to closely approximate a naturally occurring low intensity ground fire. No ignition will take place within the no treatment zones (within 50' of all streams). On all streams, handpile burning and underburning would be outside of 50 feet. Burning would be done when conditions allow for a cool controlled burn in order to reduce potential tree mortality and reduce potential soil damage. Burn objectives include the reduction of fuels created by vegetation treatments and consumption of smaller diameter down woody debris.

Slash treatment and fuel reduction objectives could incorporate the use of a slashbuster machine. The slashbuster would not treat areas within 50' of perennial and intermittent streams, with the treads stopping at 75'. The slashbuster will only cross intermittent streams at approved crossings. Perennial streams will only be crossed at improved crossings (i.e., a road with a culvert). Low intensity (winter/spring) underburning could be done within 1-5 years after mechanical treatment if needed to reduce fuel hazard to desired low hazard levels. Fires would be allowed to back into the no treatment areas, but no ignition would be done within 50' of streams.

#### **4. Proposed Action: Special Forest Products (common to Alternatives 2 and 3)**

##### a) Special Forest Products (SFP) Program Objectives

The primary objective is to provide a variety of special forest products sale / collection opportunities and to utilize forest products where consistent with the vegetation, habitat and stand objectives.

##### b) Proposed Action

All units proposed for harvest, fuel reduction or young stand treatments (see Tables B-1 and B-2, Appendix B) would be available for special forest product (e.g., poles, fuelwood, burls) harvesting / collection. SFP harvesting / collection would be permitted only to the extent consistent with the stand treatment and silvicultural objectives. Lichen harvesting would be limited due to the presence of rare lichens. All logging system environmental protection measures (e.g., seasonal operating constraints, soil protection measures) would be complied with. Collection / harvesting could occur before or after the primary stand treatment. Pole harvesting / collection could include helicopter removal of poles to designated areas (e.g., operator spurs, landings and roads). The overall alternative and stand treatment objectives, and the silvicultural prescription (Appendix B), would guide any SFP activity.

#### **5. Proposed Action: Young Stand / Forest Development Treatments (Alternatives 2 & 3)**

##### a) Objectives of the Young Stand Treatments

The objective of young stand treatment is to accelerate the growth of young stands while retaining a species composition and diversity appropriate to the site. Such treatments are appropriate to both the matrix and the riparian reserve land allocations (see Riparian Reserve Treatments, Proposed Action 3) where they will promote the respective land allocation objectives.

## b) Description of the Young Stand Treatments

The areas / units proposed for young stand treatments are listed in Table B-1 (Appendix B). The proposed treatments are described as follows:

(1) *Brushing (BR)* - Brushing treatments remove hardwoods and shrubs to provide more growing space to the residual trees, thereby enhancing conifer and/or hardwood survival and growth. Cutting of trees (conifer or hardwood) would be done with a chain saw. Surplus hardwood vegetation is defined as all brush and hardwoods <8"DBH *not* selected as a leave tree. Coniferous surplus trees are ≤6" DBH and *not* selected as leave trees. All tanoak <12" DBH would be cut. Conifer leave trees would be spaced approximately 8' apart in most units; hardwoods would be spaced approximately 25' apart.

(2) *Precommercial Thinning (PCT)* - Precommercial thinning consists of cutting or girdling surplus trees and brush to increase moisture, growing space and nutrient availability for selected reserve conifer and hardwood leave trees. This is to provide more growing space and thus enhance conifer and/or hardwood survival and growth. All tanoak <8" DBH and brush would be cut. All sprouting hardwood stems not selected as leave trees, and all surplus trees 7" DBH would be cut. Vigorous and well-formed conifer leave trees would be maintained at an average of 14' spacing (220 trees / acre) and well-formed leave hardwoods would be maintained at either 20' foot spacing (110 TPA) or 25' foot spacing (70 TPA) spacing depending on the particular treatment unit. Where average stand diameter exceeds 7" DBH, surplus trees up to 12" DBH would be cut. Vigorous and well-formed conifer leave trees would be spaced not to exceed an average of 20' spacing (110 TPA) and well-formed hardwoods would be maintained at either 20' foot spacing (110 TPA) or 25' foot spacing (70 TPA) spacing depending on the particular treatment unit.

(3) *Slash treatment* - After brushing or PCT, the resultant slash would be evaluated for hazard reduction treatment need. Evaluation will be based on the level of the fuel hazard, fire risk, and the value of resources within stand and the adjacent area. Slash reduction treatment would be conducted if judged warranted. The most common slash treatment would be hand piling and burning (HP). Other treatment options include lop and scatter (LS) or removal of slash as poles or firewood.

(4) *Tree Planting (TP)* - This will involve interplanting of nursery seedling stock in stands that are below BLM's standards for fully stocked stands. Often included with tree planting are maintenance treatments to enhance growth or increase the chance of seedling survival in the first years after planting. These include hand tool scalping a small circle of the competing grasses and forbs around the planting spot, and/or paper mulch or vispore installation to prevent soil moisture loss around the planting spot, and /or installation of tree netting to prevent browsing by wildlife, and/or an application of a delay release fertilizer packet with the seedling at the time of the planting.

## 6. Proposed Action: Vegetation Treatments in Older Seral Stands

### a. Introduction

Two alternatives for thinning and harvesting timber in older (mid, mature and old growth) seral stage stands are presented. The broad objectives for both alternatives are: (1) to capture suppression and mortality in the older stands while promoting tree growth and species diversity across the mosaic of landscape conditions and (2) to reduce the potential for stand replacement wildfire. An objective common to both is to harvest timber to meet the NFP's and the BLM's commitment to produce forest products

(timber).

The scale and focus for treatment proposals is at the individual stand level. In some cases this may be at a finer grained mosaic than that reflected in the larger operations inventory (OI) units shown in Table B-2. In essence, the prescribed stand treatments may appropriately vary within a mapped operations inventory unit in recognition of, and in response to, variations of conditions within the unit.

Specific treatment proposals are spelled out for each alternative and each unit in Table B-2 (Appendix B). Unit locations are shown on the Maps in Appendix A. A summary of the overall extent of each treatment type proposed for each alternative is summarized in Table 3-1. The various types of treatment prescriptions referred to in these tables are described below and apply to both action alternatives.

*Commercial Thinning/ Modified Group Selection (CT/MGS)* - On a Douglas-fir series stand, this treatment is directed at retaining a healthy, growing conifer overstory. It would remove merchantable size trees (4+\" DBH) that have slowed in growth or are subject to density induced mortality. This treatment strives to insure that hardwood and pine components would be developed for long term species diversity and soil productivity. On pine series or pine associations sites fewer trees per acre would be retained than on the Douglas-fir series sites. The following is a more specific objective discussion and a description of this type of treatment prescription:

- *Commercial thinning* of Douglas-fir, pine species, and other conifers would be done with the intention of decreasing stand density. This treatment would remove suppressed trees and clumped intermediate and co-dominate trees to increase individual tree growth and accelerate seral stage progression of the stand. It would use the crown radius of the most healthy trees to measure spacing between the retention trees.
- *Group selection* is used to encourage the growth of existing Douglas-fir reproduction and to retain shade intolerant ponderosa pine and sugar pine species in mixed conifer stands. The group selection system is an uneven-aged silvicultural system in which a small group of trees ranging from one-half to three acres in size are periodically harvested from within larger stands. These sites are then regenerated either naturally or through planting to ensure prompt reforestation. The resultant openings will vary in size, shape, and distribution. Distribution of groups will be first centered on existing conifer reproduction and large pine. This will avoid aggregating groups to one area in the unit.
- *Modified group selection for pine survival* is the removal of trees from around selected pine trees. This treatment removes those trees (usually Douglas-fir) that are competing with vigorous pines. It favors and retains the larger vigorous pine (Ponderosa or Sugar) that have a 30%+ live crown ratio. It is intended to increase the chance that these larger and older pine will survive and regenerate pine seedlings.
- *Modified Group Selection for hardwood survival* is the removal of other trees around selected hardwood trees. It would be done when large healthy hardwoods are present. This treatment manages for long term survival of the large hardwoods such as black oak, madrone, white oak, live oak, maple, or tree form tanoak. It is intended to maintain a stands' species diversity. Between one and five vigorous hardwood trees per acre would be selected for retention. Vigorous hardwoods are those trees with a 25%+ live crown ratio, which show a low amount of disease (rot), and that could be expected to remain alive for at least the next 15 years. The long term survival of these trees would be encouraged by removing conifers that are

competing with the hardwood. On some sites especially suited to hardwood dominance, more than five hardwoods could be left per acre. In these situations, selected hardwoods would be included in the conifer spacing pattern and favored for retention over conifers. In areas where the white oak series is present, the treatment will manage for the survival of the White Oak.

Structural Retention for Stand Regeneration (SR) - The objective of this stand treatment is to increase the growth of the existing understory trees or to regenerate a new understory with natural seeding and / or tree planting. Stands with an overstory stand age greater than 120 years and which have a poor annual stand growth rate would be selected for this treatment. Due to tree and stand conditions, commercial thinning of these stands would not provide the desired growth and increase in productivity, thus the SR prescription. A target of 16 to 25 large conifer trees per acre (Southern General Forest Management guideline) would be retained. Trees greater than 6"DBH would be removed between the trees selected for retention. Due to within unit variability, portions of some of these stands may be treated with the CT/MGS prescription where more appropriate.

In addition, hardwoods would be managed for long term survival of the large hardwoods (black oak, madrone, white oak, live oak, or maple). Between one and five hardwood trees per acre will be selected for retention. The long term survival of these trees would be encouraged by removing those conifers that are competing with them. On some sites especially suited to hardwood dominance, more than five hardwoods would be managed per acre. In these situations, selected hardwoods would be included in the conifer spacing pattern and favored for retention over conifers. In areas where the white oak series is present, the treatment will manage for the survival of the white oak. Vigorous hardwoods are those with a 25%+ live crown ratios that show a low amount of disease (rot) and which are judged capable of surviving for at least the next 15 years.

Density Reduction with Some Commercial Thin (DR / CT) - This is a Density Management treatment that will not produce as much wood volume as the previously described stand treatments. It is typically prescribed in stands that may have a scattered overstory of larger trees that are reserved by the "Green Tree Retention" requirements of the NFP and RMP. The objective of this treatment is to reduce the fuel hazard, reintroduce fire and improve tree growth in stands that have a high stem density but a low commercial product potential. Some irregular tree groupings within the units would be thinned and provide products of poles, firewood, or saw logs. Leave trees would be spaced to widths ranging from 17' to 35'. Wider spacing would be used when leave vegetation includes species such as pine or oak which thrive at their healthiest state in less dense conditions.

Post Harvest Treatments for All Harvest Units - After thinning / harvesting is completed, the proposed action would continue to treat the site with some or all of the following treatments:

- The main stems of selected suppressed smaller trees would be severed (slashed). Selected trees would be those small suppressed trees that are within the drip line of the larger trees chosen for retention. Suppressed trees are those judged to be unable to recover and become healthy growing trees after the harvest treatment. The plant competition for water and soil nutrients would be lowered by severing the stems of the suppressed competing conifers and hardwoods.
- Damaged residual saplings and damaged pole size trees would be severed. Water and soil nutrient availability would be improved for the healthy trees remaining. In general, a damaged tree would be less than 6" DBH and have a slow recovery from injury, e.g., a sprung tree or a broken top tree that was bent over by the skyline cables during logging.

- The understory vegetation would be selectively thinned. The density of competing vegetation would be reduced by thinning the *conifer* understory trees to an approximately 16' spacing. *Conifer* trees less than 6" DBH between the trees chosen for retention would be slashed. The *hardwood* understory trees would be thinned to a 20' spacing. The healthiest and most vigorous trees would be selected for retention.

- Logging and thinning slash would be burned. This treatment would under burn (UB) or hand pile and burn (HP) the tree limbs and other debris on the ground after logging and thinning work is completed. The intention is to reduce fuel loading and/or create planting spaces. Live tanoak and other brush species would also be targeted for burning to reduce conifer seedling competition.

*Sensitive Species Management (Wildlife and Botany)* - Modifications to the treatments will be done in order to meet the appropriate management guidelines / recommendations of various special status species.

#### **b. Alternative 2 - Older seral stage stands**

##### 1) Objective / Theme

Alternative 2 emphasizes increasing long term stand growth by reducing stem densities from all canopy layers and tree size classes. Vegetation treatments and harvesting in older seral stage stands would follow the RMP's south GFMA silvicultural prescription (RMP - Appendix E). Residual stand structures and stand variability would be as described in the RMP. Targeted post treatment canopy closure would vary between 25% and 40% on harvest units. Project area diversity would be maintained through the variety of buffers and reserves within the project area (*e.g.*, riparian reserves, special status species).

##### 2) Proposed action

Specific treatment proposals are spelled out for each unit in Table B-2 (Appendix B) and on the Maps in Appendix A. A summary of the overall extent of each treatment type proposed for this project alternative is shown in Table 3-1. The units / stands highlighted in Table B-2 are those where there is a different treatment between Alternative 2 and 3.

#### **c. Alternative 3 - Older Seral Stage stands**

##### 1) Objective / Theme

Alternative 3 places a greater emphasis on the retention of late-successional forest characteristics than does Alternative 2. Alternative 3 is designed to meld commercial timber harvest from these stands while retaining a denser canopy closure with a more complex structure.

In alternative 3, the objective would be to manage *more* acres for habitat and connectivity of late-successional forest dependent species than in Alternative 2. It would achieve this objective by retaining *more* acreage with a canopy closure of 60% or more than would Alternative 2.

##### 2) Proposed Action

See Table B-2 (Appendix B) and Maps in Appendix A for specific unit treatment proposals.

Alternative 3 proposes the same harvest and vegetation treatments as for Alternative 2, *except* with

regard to the treatments in stands that currently provide late-successional forest habitat based on McKelvey 1 and 2 indices for northern spotted owl habitat. These units / stands are highlighted (shaded) in Table B-2 (Appendix B) to distinguish where the alternatives differ.

In the highlighted units, the alternative 3 silvicultural prescription would be a commercial thin predominately *from below*, with a *limited* Group Selection (CTB/LGS), but, in contrast to Alternative 2, would retain an average residual canopy closure of approximately 60%. Commercial thinning would target trees in the intermediate and suppressed layers in order to maintain a relatively high canopy closure in the large tree / overstory population. Co-dominate removal would be limited to areas where a 60% or greater canopy closure would result after harvest. Group Selections would be limited to 1 per 10 acres. In all other respects, the harvest and post harvest treatments would be the same as described for Alternative 2.

## **7. Proposed Action: Prescribed Fire / Fuel Hazard Reduction Treatments (Common to Alternatives 2 and 3)**

### a. Objectives of prescribed fire / fuel hazard reduction

The broad objectives in the design of the proposed treatments are to:

- Manage/treat the natural fuel accumulations in a manner that will moderate the fire behavior and reduce the severity of the effects should a wildfire occur. National Fire Danger Rating System (NFDRS) fuel model changes can characterize this objective:
    - In brush fields where the vegetation is continuous and 6 feet tall (fuel model 4), reduce the brush from 13 tons per acre to approximately 4 tons per acre (fuel model 5). With a moderate wind (5 mph) in summer conditions this would decrease flame lengths from 19 feet to 4 feet.
    - In timber fuel types modify the fuel model from the overcrowded heavy litter layer (fuel model 10) to the less crowded (fuel model 8). With the same conditions mentioned above, the ground fire flame lengths decrease from 4.8 feet to 1 foot.
- These fuel model modifications would make fire suppression easier and safer for wildland firefighting thereby reducing the risk of catastrophic fire in the area.

- Reintroduce fire into the ecosystems using controlled prescribed burns, consistent with vegetation conditions to create conditions such that low intensity fire regimes and frequent fire return intervals can be restored to those that historically typified these vegetation types.
- Restore selected wildlife habitats (e.g., oak woodlands, meadows) using prescribed fire.
- Reduce the fuel loads resulting from stand vegetation treatments (thinning, brushing, shredding, timber harvest, etc.) to reduce the post treatment fuel hazard.

### b. Description of Proposed Action

No prescribed fire treatments are proposed in section 4 where the Biscuit fire burned. The effects of the burn out operation in this section met the fuels objectives that had been considered for this area prior to the Biscuit fire.

Fuel hazard reduction treatments would not be applied in the “no treatment” zones within riparian

reserves.

Prior to any burning treatments, all treatment areas would be evaluated for their potential to provide special forest products (*e.g.*, firewood or poles). Materials would be offered for sale and removal prior to burning if possible and consistent with resource management protection measures and the vegetation treatment prescription.

The fuel treatments proposed are indicated in Table B-2. These proposals reflect the current best judgement of fuel treatments needed to meet the objectives and desired conditions in each unit. Following any vegetation treatment, the unit would be reviewed by an interdisciplinary team of resource specialists to reassess stand / fuel conditions and fuel reduction treatment proposals. The currently proposed treatments would be adjusted based on these post-treatment condition evaluations, a consideration of the physical, biological, and social features of each specific site at that time and prioritization based on available funding.

Fuel reduction treatments are expected to occur in all timber harvest units. If prescribed burning is initially proposed but, upon post harvest review, it is determined that it is not most appropriate treatment, handpiling and burning or lop and scattering of slash would most likely occur. Slashbuster use would be limited to those acres indicated in Table B-2 and areas shown on Map 1.

Treatments associated with pre-commercial thinning, wildlife habitat enhancement and fuel hazard reduction would occur based on prioritization and annual funding. Prioritization factors include distribution and need for habitat development, biological and social constraints, and strategic hazard reduction needs for wildland fire protection. It is anticipated that no more than 80% of the acreage currently proposed for treatment would actually receive treatment. In units where pre-commercial and under-story thinning treatments are proposed but an associated prescribed burning treatment is not, slash would be lopped and scattered.

Descriptions of the proposed actions noted in Table B-2 are as follows:

*Understory Thinning (UT)* - Understory thinning would be mainly used as an initial entry treatment to thin dense under-story vegetation reducing fuels which contribute to high intensity wildland fires. Reducing the under-story will decrease the existing fire and fuel hazards and allow for the reintroduction of fire through controlled under-burning and/or broadcast burns. Where it is operationally impractical because of significant risks to ecological processes or to rural communities, under-story thinning may be utilized to maintain the low fuel hazard created by the initial treatment. The density of the under-story vegetation would be reduced by cutting and spacing of vegetation that is less than 6" DBH. All trees greater than 12" DBH would be reserved. Species diversity would be maintained by selectively slashing hardwoods, conifers and shrubs and reserving specified species. Spacing of vegetation is based on the over-story present in each area. Over-story trees greater than 12" DBH with 30%+ crown ratio will be used in determining spacing of under-story vegetation. The under-story vegetation will be reduced according to the spacing listed in Table 2-3. Leave vegetation would be spaced to widths ranging from 17' to 35'.

<b>Crown Ratio of Overstory</b>	<b>Overstory Diameter</b>	<b>Understory Vegetation Spacing</b>	<b>Diameter of Vegetation Slashed</b>	<b>Reserve Species</b>
> 30 %	< 12" DBH	conifers - 17' x 17'; hardwoods - 20' x 20'; shrub species - 35' x 35'	conifers and hardwoods - 2" - 6" DBH shrub species - > 2' tall and < 6" DBH	Dogwood, Maples, Yew, Mahogany
>30 %	12" - 20" DBH	conifers / hardwoods - 20' x 20' shrub species - 35' x 35'	conifers and hardwoods - 2" - 6" DBH shrub species - > 2' tall and < 6" DBH	Dogwood, Maples, Yew, Mahogany
> 30 %	> 20" DBH	conifers / hardwoods - 25' x 25' shrubs - 35' x 35'	conifers and hardwoods - 2" - 6" DBH shrub species - > 2' tall and < 6" DBH	Dogwood, Maples, Yew, Mahogany

*Understory Burning or Underburn (UB)* - The purpose of prescribed fire used in this manner is to reduce the fuel hazard for both dead and down woody material, to reduce the amount of ladder fuels present, to maintain the low fuel hazard created with initial fuels treatments, to restore wildlife habitats, meadows and oak woodlands and to reduce the fuel hazard created during harvest operations. Understory burning would be conducted at any time throughout the year when fuel and weather conditions permit the successful achievement of resource and safety objectives. Typically, burning is conducted from fall through late spring. Summer or early fall burning is less common, but can be feasible and would be used when needed to meet resource objectives and when the risk of an escaped fire risk can be mitigated.

*Wildlife Habitat Enhancement/ Oak Meadow Restorations* - These treatments are designed to reduce both live and dead fuel loads, lower the fuel hazard, and increase wildlife habitat values. Understory thinning (UT) and hand piling and burning (HP/B) may also be utilized in these areas prior to prescribed burning as a means of increasing the effectiveness of the prescribed burn. (See the wildlife proposed action for the location of the burn units.)

*Hand piling and burning (HP/B)* - HP/B reduces the hazardous slash created by the various described vegetation treatments (young stand treatments, fuel reduction treatments, commercial thinning, harvesting, etc.) and when understory burning (UB) is not possible. Fuels 1 - 6" in diameter and greater than 2' in length are stacked in piles by hand crews. Piles are covered to maintain a dry ignition point. Piles are burned in the fall or winter season after enough precipitation has occurred. Piles are burned during this season to reduce the potential for fire spreading outside each pile and to reduce the potential for scorch and mortality to the residual trees and shrubs.

*Slashbuster (SB)* - The slashbuster is a large excavator equipped with a 30 foot boom and a hydraulic chipping / shredding blade designed to reduce fuel loading and fire hazard. The (SB) shreds slash and/or live vegetation which immediately alters the fuel profile and changes the (NFDRS) fuel model. This reduces the immediate need for prescribed burning and lowers burn intensities where fire is prescribed. A followup low intensity maintenance burn may be prescribed in slashbuster treated areas from 1 to 5 years after SB treatment.

*Lop and Scatter (L/S)* - This fuel reduction treatment does not burn the fuel. Rather it is cut into smaller pieces and scattered so that it is in contact with the ground surface. The resultant fuel bed decreases decomposition time and would have a slower rate of spread and flame height during a wildfire. This is an alternative to other treatments when burning is not considered feasible.

## **8. Proposed Action: Wildlife Habitat Restoration and Enhancement Burning (Common to Alternatives 2 and 3)**

#### a) Objectives of the Treatments

A number of prescribed burns are proposed to restore and enhance wildlife habitat that is provided by oak woodlands, chaparral, and dry meadow vegetation types. The objectives of these projects are:

- restore a wide variety of plant communities to their natural range of conditions;
- restore big game (deer and elk) winter range quality;
- reinvigorate and maintain chaparral and, therefore, the species dependent on chaparral;
- reinvigorate the indicated habitats in those areas where they have become largely senescent, overly dense, or where they are declining due to encroachment by fire intolerant species.

#### b) Description of the Proposed Treatment

In units 38S-8W-3-002a and 003, 38S-8W-4--005 and 37S-8W-35-001, prescribed burning would be done on an approximately 376 acre chaparral, grassland and oak stand mosaic. Decadent brush would be targeted for removal, as will all conifers except vigorous pine and large limbed, open grown Douglas-fir. Burning would be done when conditions allow for a cool controlled burn. This is most likely to occur in the fall, winter or early spring. Mechanical treatment with chain saws may be done prior to burning to reduce the threat of escape and to reduce fire intensity. Ignition would be done with hand devices such as drip torches. Small temporary fire control lines would be constructed where needed for points of control. Work may be done with hand tools (e.g., chainsaws, shovels, axes and pulaskis).

The wildlife burn on Squaw Creek in section 4 will not go closer to the creek than the road, which is about 250 feet from the stream. As a result of the burnout activities associated with the Biscuit Fire, the west side of Squaw Creek has already been burned. The proposed wildlife burn would only take place on the east side of Squaw Creek. In sections 3 and 35 burning within the riparian reserve would take place only as a backing burn without direct ignition.

### **9. Proposed Action: Roads and Transportation System Management (common to Alternatives 2 and 3)**

#### a) Objectives

The planning objective is to minimize permanent road construction, to rely on temporary spurs that would be decommissioned or obliterated upon conclusion of the project work, to renovate and maintain existing roads at levels consistent with the planned long term use of the road, and to reduce densities at the watershed scale where possible and consistent with the anticipated long term resource management needs.

#### b) Description of the Proposed Action

Table C-1 (Appendix C) lists the roads that would be used, constructed, improved, renovated, and/or decommissioned as a part of this project. Construction, improvement, and renovation work would primarily be done in conjunction with commercial harvest and other vegetation treatment actions. The timing of other proposed road work would be dependant on future funding availability.

### **10. Proposed Action: Access (common to Alternatives 2 and 3)**

The BLM does not currently have access rights to an 80 acre parcel of BLM land in the W1/2NW1/4 of Section 35, T37S, R8W. This parcel is primarily within the matrix land allocation and 49 acres of it is in the TPCC timber base lands.

The preferred access route is via Road 37-8-35.1(Seg. A and B) (See Map 1) for both management access and log hauling. Use of this road will require an easement from the landowner. The road would be renovated by improving road drainage, out sloping the road template, and placing and rocking the road surface with 6 - 8" of crushed aggregate.

Operator spur "C" would be constructed from approximately MP 0.08 of segment B to allow conventional tractor and cable thinning in unit 37S-R8W-35-002. This spur would be approximately 0.21 miles in length and located on the mid-slope thereby maximizing log system efficiency. Operator spur "D" would provide access to Unit 37S-R8W-35-003 to allow conventional tractor thinning and cable thinning. This spur would junction off of operator spur "C" and proceed south along the mid-slope for a length of approximately 0.35 miles. Construction would be to BLM minimum road standards for both spurs. Following all project work, both spurs would be obliterated including pulling the road fill material to re-contour slopes and provide for natural drainage patterns. Construction slash would be places on re-contoured slopes to minimize sedimentation yield.

If the requisite easement cannot be obtained, the thinning in Units 35-002 and 003 would be done with helicopter logging. Landings would be located in Sections 3 and 34 along a private road where the landowner has indicated that permission to use this road would be granted.).

## **11. Proposed Action: Grazing**

### **a) Objective**

To incorporate into the grazing plan for the Deer Creek Allotment grazing practices that will appropriately protect special status species and riparian resources and which will contribute to the attainment of ACS objectives.

### **b) Proposed Action**

In the event that an application is received to re-establish grazing in this allotment, a new allotment management plan and grazing plan would be prepared. These plans would include the following requirements:

- (1) Adequately fence both sides of Squaw Creek next to the existing roads in the Creek Pasture to keep cattle away from the streams and their lower slopes. An alternative water source may be necessary for livestock watering.
- (2) Rebuild the old fence along the north side of the Illinois River Road in Section 9 (This will be done as a part of the Biscuit Fire rehab work.) Establish monitoring to assess the success of the native grass seeding in the displacement of medusa head rye.
- (3) Remove the Eight Dollar mountain pasture from the lease area. This includes all acreage south of Illinois River road and adjacent to Squaw Creek. Removal is recommended in order to

protect the values of the ACEC and to meet the Northwest Forest Plan's ACS objectives in the fens, Squaw Creek and Deer Creek.

(4) The current seasons of use for the pastures appear to be adequate but should be monitored closely to maintain population dynamics for each special status species present in the allotment. Conduct a more comprehensive assessment to determine if grazing is adversely impacting the species of concern during this time period. If necessary, develop and implement a rotational grazing system that would allow complete rest of the populations within each designated pasture on alternating years. Establish a monitoring program to assess the impacts of grazing to serpentine habitat and special status species populations. Adjustments could then be made to adaptively manage to protect this sensitive area.

(5) Herding, fencing, salting, and off stream water development should be implemented in order to aid in livestock distribution and limit livestock concentration in the riparian areas. The goal would be to maintain riparian and stream conditions that maximize shade, summer flows, and channel depth.

#### **D. Project Design Features**

Project design features (PDFs) are included in the proposed action for the purpose of reducing anticipated adverse environmental impacts which might stem from the implementation of the proposal. The PDFs noted below would be a part of all action alternatives, unless otherwise noted.

##### 1. Logging Systems

###### a. All systems

All harvested trees would be limbed (3" or greater diameter limbs) in the units prior to yarding. This is to reduce the extent of damage to the residual stand and to reduce soil disturbance.

Natural surface landings constructed during the logging operation would be decompacted to a minimum depth of 18", seeded with an erosion control grass and legume mixture or native grass seed, and if available, straw mulched upon completion of the harvest activity and before the onset of the rainy season. Standard vehicle turn around spots would be maintained un-decompacted where landings are at the end of roads that would be left open.

###### b. Tractor, Skidder and ATV Logging systems

No new skid roads or new stream crossings will be constructed in riparian reserves. Skid trails approved for use would be those that have not recovered from previous use and which would benefit from site amelioration / restoration treatments. Within riparian reserves, trees will be directionally felled to pre-existing skid roads approved for use. Site restoration treatments would be applied after yarding has been completed and would include such things as ripping / decompaction, water barring, seeding, tree planting and blocking as appropriate for the site.

To reduce ground disturbance and soil compaction, yarding tractors would be limited to the smallest size necessary. Tractors would be equipped with 75 foot bull line and integral arches to obtain one end log suspension during skidding of the logs. They would be restricted to approved skid trails. Existing skid trails would be used whenever possible. Tractors would be restricted to slopes less than 35% although

short pitches that exceed 35% would be permissible if necessary.

Seasonally restrict tractor logging in Sec. 35 (unit 002) to between June 1 and October 1 and/or when soil moisture content at a depth of 6 to 8" is less than 25%. Elsewhere, tractors would not be authorized when soil moisture content at a 4 - 6" depth exceeds 25% by weight determined with a Speedy Moisture Meter.

Skid roads would be water barred in a manner appropriate to the slope and soil type. Main tractor skid trails would be blocked where they intersect haul roads. Tractor skid roads would be decompacted and waterbarred shortly after yarding is completed to reduce the erosion potential (see (3)(d), Roads...). The ripped skid roads would be planted with trees in areas which are proposed for planting. Other areas would be allowed to seed in naturally.

All terrain vehicles (ATV's) or other rubber tire vehicles (including trucks) will operate only in designated areas and on designated trails. In situations where it will be effective and operationally safe, slash will be left on the on the running surface of skid trails to avoid rutting and compaction caused by rubber tires.

c. Cable and Helicopter Yarding

In cable yarding units, step landings would not be permitted. Cable yarding corridors would be located away from draws. Cable yarding corridors would be waterbarred as needed and at spacings appropriate for the slope and soil type.

All landings, including fill slopes, would be located away from headwalls and draw bottoms and adjacent draw side slopes. Some existing roads and landings have been constructed in the past within the riparian reserve. If these roads and existing landings are stable, they would be reused to minimize additional new road or landing construction.

These landings would be decompacted and planted according to prescription and covered with mulch or small diameter slash (less than 12" thick). Maintenance and decommissioning of landings and spurs will be done in accordance with BMPs (Medford District RMP, Appendix D-VII).

2. Seasonal Operation Restrictions

Table 2-4 outlines the seasonal operating restrictions that would apply:

<b>Table 2-4: Seasonal Operating Restrictions</b>			
Location	Restricted Activities	Restricted Dates	Reasons / Comments
Entire project area	All logging and log hauling operations	Oct. 15 to May 15 of following year	Erosion Control. Some variations of the dates would depend on weather and soil moisture conditions.
1/4 mile radius around known spotted owl nest sites. Any other discovered spotted owl nest sites	All timber harvest activities (felling and yarding), road construction, chainsaw operation and prescribed burning	March 1 to June 15 (or later if deemed necessary)	Dates and restriction dependent on nesting status. (Rogue River/South Coast Biological Assessment, 1998)
Entire sale area - 1/4 to 1/2 mile radius around any raptor nest	All timber harvest activities (felling yarding, road construction) and chainsaw operation.	Variable depending on the species	(BLM Instruction Memo OR-99-036).

All harvest units and road construction ROWs.	Various activities depending on the species	Variable depending on the species	Restrictions only if special status species are located. (BLM Instruction Memo OR-99-036)
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### 3. Fire and Fuels Management & Fuel Hazard Reduction Treatments

#### a. Prescribed Burning

Prior to any prescribed burning, a prescribed fire plan would be prepared to address burning objectives and operational concerns. The plan would include acceptable fuel moisture and weather parameters. Burning would be conducted under weather conditions that would be consistent with achieving the burn objectives, which include safety and controllability. It would take into account the availability of adequate fire suppression resources. Prescribed fire plans include design features to diminish any potential of fire escape from control lines. These features must be in place before burning is permitted to occur. Features include: prescribed weather and fuel moisture conditions which produce fire behavior which can be readily controlled by direct attack; specified numbers of people and equipment required for holding forces; and escape contingency requirements such as the availability of backup forces, both locally and regionally.

To prevent fire from escaping control and to minimize potential damage to overstory trees, burning would typically occur during the fall to early spring when conditions allow the least active fire behavior.

Prescribed burning would be managed in a manner consistent with the requirements of the Oregon Department of Forestry's Smoke Management Plan and the Department of Environmental Quality's Air Quality and Visibility Protection Program. Smoke would be managed to preclude intrusion into air quality maintenance areas when air stagnation conditions exist. These conditions are usually described as "yellow" or "red" wood stove advisory days. Additional measures to reduce the potential level of smoke emissions would include: mop-up as soon as practical after the fire, burning with lower fuel moisture in the smaller fuels to facilitate their quick and complete combustion, burning with higher fuel moisture in the larger fuels to minimize consumption and burn out time, and covering handpiles to permit burning during the rainy season where there is a stronger possibility of atmospheric mixing and smoke dispersal.

All areas planned for prescribed fire treatments that contain sensitive plant species would be burned under the weather and fuel conditions and/or season that minimizes impacts on plant reproduction and active growth. Areas with rock outcrops or talus where S&M species would be buffered from any prescribed burn to avoid potential impacts to these species.

All proposed treatment units would be re-evaluated by an interdisciplinary team of resource specialists following logging or other vegetation treatment to insure that the slash/fuel treatments are appropriate for the post harvest/treatment condition. Fuel reduction treatments noted in Tables B-1 and B-2 would be changed if it appears that something different would better accomplish fuel treatment and/or site preparation needs while reducing the potential adverse impacts on air quality and site productivity.

Fire lines would be constructed as a part of broadcast and understory burning. Construction would be done with hand tools only. Handlines constructed in the riparian reserve for safety and containment will be minimal. Waterbarring would be used on all fire lines where slope exceeded 10% to control water runoff and limit potential erosion.

Patrol and mop-up of burned areas would occur to prevent areas from reburning and becoming escaped

fires. A helicopter with water bucket may be used during mop-up to aid in extinguishing larger burning fuels and internal reburning in islands of unburned fuels.

b. Slashbuster use

The following *project design features* would be applied to the use of the slashbuster machine:

- The slashbuster machine would be restricted to slopes less than 40%
- Only low ground pressure (<4 psi) machinery equipped with semi-grounder tracks would be permitted. The shredding head would be mounted on an articulated boom at least 30' in length.
- The slashbuster will only cross intermittent streams at approved crossings. Perennial streams would be crossed only where there is an existing improved crossing (i.e., road and culvert).
- In riparian reserves the treatment will be no closer than 50' from stream channel beds. The tracks of the machine will be kept 75' or more from any stream (except at designated crossings). The slashbuster machine would be restricted to slopes generally less than 40%. The under-burning of slashbuster units would not occur within 50' of streams, however, fire would be allowed to back into the no treatment areas. No ignition would occur within 50' of streams.
- Slashbuster operations would be permitted only when soil moisture content is less than 20% at the 6" depth level on non-serpentine soils and 20% at the 8-12" level on serpentine derived soils.
- In those portions of the proposed units where the slashbuster is precluded from operating, fuel reduction treatments would be accomplished using the methods by tools in the manner indicated in the EA such as hand piling and burning or lop and scattering.
- Interdisciplinary team post-treatment evaluations would be completed after each stage of vegetation treatment to review fuel treatment needs at that point and to update treatment proposals if needed.
- No mechanical operations would be conducted within special plant buffers.
- In areas where slash accumulates in a 6" or greater bed depth over a 100' x 100' area, the slash would spread out and slash depths reduced to allow germination of young plants.
- In areas of continuous brushfield, a minimum of two (2) "clumps" per acre of brush would be left untreated. A "clump" is an area approximately 25' x 25'. The intent of these clumps is to provide hiding, foraging, and nesting cover for a variety of wildlife species. The location priority for the untreated clumps would be moister micro-sites such as northerly aspects or concavities. These moist sites would have had a slightly different fire regime and would have the best potential for brush/shrub species to attain a larger size with normal fire disturbance. Where they exist, no-treatment special status plant buffers may be considered as "clumps" for this purpose. In other cases the location of the clumps would be up to the discretion of the equipment operator but would be at least 100' apart. No-treatment clumps would not be implemented in the meadow restoration or timber harvest areas.
- Slashbuster access points would be blocked with slash after treatment where they intersect with

roads to reduce potential off road vehicle activity in treated areas.

- The slashbuster would stay out of buffered cultural resource areas.

- If used in timber harvest areas, it would be restricted to areas where tractor logging preceded.

#### 4. Roads - Construction, Improvement, Decommissioning, Closures

All operator spur construction and road improvement would be done at the BLM standards appropriate to the intended long term use of the road. Road closures, decommissioning, and obliterations are intended to reduce the potential for erosion and to reduce the impacts on wildlife. Decommissioning / obliteration of roads that are needed to support the prescribed burning / fuel reductions would be scheduled for after burning is complete. If these roads overwintered before decommissioning / obliteration (e.g., where burning is scheduled past the wet season following logging), they would be treated for erosion control prior to winter (e.g., waterbars, seeding, mulching or slash where needed). Road maintenance and renovation will be done in accordance with BMPs (Medford District RMP, Appendix D-VII).

#### 5. Dust Abatement

Dust created from log hauling traffic on roads would be abated when conditions warrant in order to reduce driving hazards and protect the fine materials which bind the road surface rock, thereby increasing its longevity. Dust abatement would be in the form of water and/or lignin, or reduced vehicle speed.

#### 6. Wildlife Trees and Dead and Down Material

All snags greater than 14" DBH would be reserved from cutting and removal in all units, unless they pose a safety hazard. If a snag is felled in the course of operation it will remain on site. An additional 3 large poorly formed and/or defective trees per acre would be marked as green wildlife trees to contribute to the future snag component. If designated snag wildlife trees need to be cut due to worker safety concerns the tree would be left in the unit and a replacement snag would be identified.

All pre-existing down woody material would be retained on the sale area. The coarse down woody debris (CWD) objective for commercial thin units would be an average of approximately one half of the level described in the NFP standards and guidelines for final harvests (*i.e.*, 60 lineal feet). It is anticipated that these goals would be met post-harvest due to typical slash loadings, breakage, post thinning mortality, etc.

Targets for CWD are expected to be met within 3 years following harvest or treatment. This time lapse would allow some of the post treatment natural processes to occur that will contribute to CWD levels, such as snow break, windfall, top breakage etc..

In stands identified for a structural retention (SR on Table B-2), the standard of 120 linear feet as outlined in the S&G and RMP would be adhered to. In order to meet the S&Gs it may be necessary to mark potential trees to contribute to the coarse woody objectives. These trees will be identified during the marking of the stand. These trees would be above the minimal number required for Structural Retention harvest and would remain standing unless post harvest monitoring (3 years) indicates the site is deficit of CWD in which time trees might be felled to provide the ecological function of CWD, or left standing to provide a long term source of CWD.

#### 7. Botanical Resources

If any S&M Component 1 or 2 species are found in any units, a no-harvest, no-ground disturbance protection buffer will be implemented around each population. Actual buffer size will be dependent on microsite conditions and will be delineated in a manner that will maintain habitat in accordance the requirements of the NFP-SEIS (January 2001) and Management Recommendations for the particular species. No slashing and burning would take place within these buffers. For all protection buffers, trees will be directionally felled away from buffer edges.

If federal or state listed, candidate or Bureau Sensitive species are found, a minimum 100-foot radius no-harvest, no-ground disturbance protection buffer will be implemented. For other Special Status species, a protection buffer will be decided upon on a case-by-case basis, depending on the species' habitat requirements.

Prescribed burns in areas containing special status plant species would follow prescriptions that result in "cool" burns which minimize potential damage to plant populations. Depending on the adaptability of each species to fire, prescribed fire operations would be done in a manner that strives to reduce or eliminate burning through identified Special Status plant population areas. Prescribed fire burn plans would articulate the necessary steps to reduce or eliminate fires in these sensitive areas.

## 8. Wildlife Resources

If S&M or special status species are located in the project area, protection measures will be implemented in accordance with the management recommendations in effect at the time of the Decision Record.

Consultation with the USFWS regarding any T&E listed species potentially impacted by the project will be completed as required by the ESA prior to a final decision for the project. Subsequent or additional consultation would be conducted if:

- (a) New information reveals that the effects of the proposed action may affect listed species or critical habitat in a manner or to an extent which was not considered in the biological opinion.
- (b) The proposed action is subsequently modified which causes an effect to a listed species or critical habitat in a manner or to an extent not considered in the biological opinion:
- (c) A new species is listed or critical habitat is designated that may be affected by this action.

The one previously located Del Norte salamander (a manage known sites species) site would receive a one tree width no harvesting or vegetation treatment buffer. Activities that would directly disrupt the talus layer would be avoided (*e.g.*, skid roads or yarding corridors). Precommercial thinning, slashing and prescribed burning would not be implemented within the buffers in order to maintain suitable microclimate for this species. Trees would be directionally felled away from these buffers.

Survey and Manage wildlife sites will be buffered according to the NFP management recommendations. Buffer size and strategy will be species and site specific per the management guidelines in effect at the time of the decision record for this EA.

Natural meadows and grasslands greater than 1 acre in size will receive a one potential site class tree length no harvest buffer around the perimeter. This is primarily to maintain thermal and hiding cover for big game species.

Mine adits occupied by bats will receive a 250' foot "no action" buffer. All activities within this buffer, including timber harvesting, burning and young stand development, would be precluded.

## 9. Cultural Resources

If cultural sites are located within the sale area, site specific protection measures would be implemented to preserve the integrity of the site.

## Chapter 3 Environmental Consequences

### A. Introduction

Only substantive site specific environmental changes that would result from implementing the proposed action or alternatives are discussed in this chapter. If an ecological component is not discussed, it should be assumed that the resource specialists have considered affects to that component and found the proposed action or alternatives would have minimal or no affects. Similarly, unless addressed specifically, the following were found not to be affected by the proposed action or alternatives: air quality; areas of critical environmental concern (ACEC); cultural or historical resources; Native American religious concerns; prime or unique farmlands; floodplains; endangered, threatened or sensitive plant, animal or fish species; water quality (drinking/ground); wetlands/riparian zones; wild and scenic rivers; and wilderness.

This project is not located within the Oregon State Coastal Management Zone (CMZ) nor has it been identified by the State of Oregon's LCDC as a project (by type and geographic location) outside of the CMZ but still needing a consistency review.

Table 3-1 summarizes the acreage of the different vegetation treatments for each of the action alternatives. It is a summarization of the comprehensive treatment proposal information of Table B-2 (Appendix B). It provides some of the context for assessing environmental effects of the Anderson West proposals.

<i>Table 3-1: Summary of Acres of Proposed Vegetation Treatment for the Action Alternatives (from Table B-2, Appendix B)</i>		
<b>Proposed Treatment</b>	<b>Alternative 2<sup>1</sup> (treatment acres)</b>	<b>Alternative 3<sup>2</sup> (treatment acres)</b>
<b>Harvest treatments</b>		
Commercial thin (CT)	350	376
Group selection (GS)	23	13
Structural retention (SR)	26	10
Density reduction with some commercial thin (DR/CT)	291	291
Total harvest unit acres	690	690
<b>Young stand treatments</b>		
Total pre-commercial thinning / brushing/ pruning	115	115
<b>Wildlife Habitat Improvement Burns</b>		
Grass and shrub mosaic burn <sup>3</sup>	251	251
<b>No treatment</b>		
Eight Dollar Mountain ACEC	1,167	1,167
Matrix	194	194
<b>Total project area BLM acres</b>	<b>2,417</b>	<b>2,417</b>
<b>Other treatments included on the above units</b>		
Fuel reduction treatments	1,500	1,500
Slash buster treatment within some fuel reduction units	200	200
Plant trees	42	10

<sup>1</sup>In alternative 2, all commercial thin treatments would be marked to the canopy density specifications for matrix lands that is described in the *Forest Plan*.

<sup>2</sup>In alternative 3, 366 acres of thin harvest treatments would be effected by a special thinning guideline that would retain a higher canopy density than alt 2. There would also be less GS and SR.

<sup>3</sup>32 acres burned in the 2003 Biscuit fire and would not be re-burned.

## **B. Site Specific Beneficial or Adverse Effects of the Alternatives**

### **1. Resource: Soil / Water**

#### **a. Affected Environment**

The Anderson West project area is primarily located in the Deer Creek -West 6<sup>th</sup> Field Watershed of the Deer Creek 5<sup>th</sup> Field Watershed. In general, this 6<sup>th</sup> field watershed is characterized by a long, somewhat wide valley bottom with moderately steep ridges on two sides. The highest elevation is 4,700' at the top of Squaw Mountain, however, none of the project area is above 3,000' elevation. The Deer Creek valley bottom elevation range is 1,150' to 1,315'.

Main streams meander in the valley bottom of the Deer Creek watershed. Class 2, 3, and 4 tributaries flow off the ridge slopes. Precipitation averages 60" to 100+" annually, usually in the form of rainfall with snow and rain above 3,000' elevation. Generally precipitation increases from east to west.

Streams in the 6<sup>th</sup> Field Watershed that are listed as Water Quality Limited (303(d)) for warm summer temperatures are Deer Creek, Anderson Creek, and Squaw Creek.

Speaker, Josephine, Pollard, Abegg, Cornutt and Dubakella soils are predominate in the project area. These soils are deep and moderately deep, well drained gravelly loam and loam surface over gravelly loam to clay subsoil. They are usually derived from altered sedimentary and extrusive igneous rock. Cornutt and Dubakella soils differ from the above by virtue of fine textures with varying amounts of cobbles generally increasing with depth and both soils are formed from ultramafic (serpentine and peridotite)

Common land use activities in the Deer-West 6<sup>th</sup> field watershed include forest management, grazing, rural/rural homesites, stores and shops in Selma, and limited recreation. All these uses can influence water quality, quantity, and soil productivity.

The Deer Creek grazing allotment encompasses a portion of the project area (all BLM lands in sections 3, 4 and 9). For the past 6 years the level of grazing that has taken place is less than permitted under the terms of the then existing permit.

The Biscuit wildfire burned in the western part of the project area, specifically covering the part west and northwest of Squaw Creek. This was all within the Squaw Creek 7<sup>th</sup> Field Watershed portion of the Deer-West 6<sup>th</sup> Field Watershed. Within the fire boundary and the 7<sup>th</sup> field watershed boundary an estimated 35%of the area burned at moderate burn severity levels, the rest burned at low and very low levels. Of the area burned at moderate burn severity levels, roughly 50% or 12 to 15% of the 7<sup>th</sup> field watershed lost tree canopy cover and some degree of surface organic matter. This resulted in peak flows and increased water yield over prefire conditions in Squaw Creek. Sediment levels in Squaw Creek have also increased somewhat. However, most sediment will be caught in the small reservoir in section 9. Summer stream temperature will likely increase slightly due to some additional exposure of western

tributary streams to solar radiation.

b. Environmental Effects

1) Short and Long Term

Table 3-2 provides summary ratings for anticipated local effects of the alternatives.

6 <sup>th</sup> Field Watershed	Term	Type of Effect	Alt. 1 (No Action)	Alt. 2	Alt. 3
DEER CREEK - WEST	Short (1-5 yrs)	Disturbance / Erosion	0	Minimal -	Minimal -
		Added Compaction	0	Minimal -	Minimal -
		Productivity	0	Minimal -	Minimal -
		Sedimentation from haul roads	0	Minimal -	Minimal -
	Long (5-20 yrs)	Disturbance / Erosion	Minimal -*	Minimal -	0
		Compaction	Minimal -*	Minimal -	Minimal -
		Productivity	Slight-*	Slight +	Slight+
		Sedimentation from haul roads	Minimal -*	0	0

Footnote: Effects ratings - (-) = negative effect; (+) = positive effect; (0) = neutral effect  
 Minimal = very little, limited to few sites;  
 Slight = little distributed over most affected area;  
 Moderate = mid level;

\*Assuming moderate to high (long term) fire hazard and risk for no action alternative

This proposal also touches west margins of Deer-Draper, McMullin, and Slate Creek 6<sup>th</sup> field watersheds. However, the area to be treated is very low and located at ridge tops. Effect to soil and water in these 6<sup>th</sup> field watersheds would be nil.

Overall, adverse effects at the 6<sup>th</sup> field watershed level would be very low and of a short term nature. Long term effects are minimally positive for alternatives 2 and 3.

The slashbuster would cause less than 5% compacted area for each treated area when accomplished within the PDFs (see PDF 3b). It may retard short term productivity where accumulations are greater than 4".

The impact ratings noted above are based on the assumption of grazing at the level of the past 5 years. Grazing at the full permitted level under the grazing recommendation for both alternatives 2 and 3 could result in a depletion of soil productivity and an increase in erosion if it were to occur immediately after the proposed prescribed fire treatments (wildlife habitat enhancement) and other fuel treatments. This would be due to exposure of bare soil in places from burning with subsequent trampling by cattle especially east of Squaw Creek in the southeast corner of section 4 (Creek Pasture).

**Proposed Mitigating Measure #1:** Exclude cattle grazing for a minimum of one year on areas that are burned by prescribed fire. This is to provide time for revegetation and to preclude trampling of exposed

soils before any vegetation is re-established.

The impact ratings noted above are also based on the usual effects of all prescribed fire treatment methods within the limits of the project design features and standard practices.

## 2) Cumulative Effects

### a) Alternative 1 (No Action)

There would be no added direct cumulative effects. Indirectly, however, there is the strong probability of wildfire(s) which would, in itself, increase levels of early seral stage vegetation, additional roads (caused by fire fighting) increasing road density, and some addition of soil compaction. Some of this has already occurred in the Squaw Creek 7<sup>th</sup> field watershed due to the Biscuit Fire. This would add to existing levels of cumulative effects if and when a fire occurs. Fire hazard in the existing condition indicates that chances of future wildfire(s) on project area lands leading to extensive increases in early seral stage vegetation are moderate to high. Increases of early seral vegetation leads to increased stream peak flow in low permeability soils such as Dubakella. It also leads to increased stream water yield. Extensive high severity fire can lead to increased erosion and sedimentation and increased summer stream temperature especially if the fire burns in close proximity to streams.

### b) Alternative 2

Added cumulative hydrologic effects at the 6<sup>th</sup> field level due to this alternative are judged negligible because there is (1) no net increase in road density, (2) a minimal addition of compaction, and 3) no increases in early seral stage vegetation. Also, this alternative would not create open areas in the Transient Snow Zone nor would it result in additional solar exposure to stream surfaces. Increases in these parameters would indicate potential cumulative increases in erosion rates, stream sediment, changes in stream flow characteristics, and summer stream temperature over the current condition. However, no such increases are anticipated.

Hydrologic cumulative effects are similarly judged to be negligible at the 5<sup>th</sup> field watershed level.

Existing cumulative effects levels are estimated based on map and aerial photo interpretation which indicate road densities are at a low level for the 6<sup>th</sup> field watershed. Other parameters (% early seral vegetation, % compacted area,) are at low to moderate levels. Existing summer solar exposure to the stream system is high.

### c) Alternative 3

Anticipated impacts would be the same as those outlined for Alternative 2.

## 2. Resource: Vegetation

### a. Affected Environment

In general, the landscape vegetation pattern that was created historically by the natural wildfire regime has been greatly altered by the success of human efforts to suppress wildfires. Without the fire caused disturbance, stand composition has shifted away from the pine and oak species to stands that are now dominated by Douglas-fir. Also, the density of stand vegetation has increased to levels that slow

individual tree growth and seral stage progression.

The influence of past harvest practices has also altered some of the natural landscape patterns in the project area. The stand condition and mosaic in section 25 and 23, in particular, reflect the results of saw timber, firewood, poles harvesting and the salvage of larger pine and Douglas-fir. The remaining understory trees (the 4 - 12" diameter class) are not well spaced for optimal growth. After past logging, these trees experienced a short growth pulse, but have now lost their vigor and are not developing the spatial / structure characteristics of complex multi-storied / multi-species stands. High stand densities, poor crown ratios and plant competition contribute to the current stagnation within the stands. Without additional disturbance, individual trees will continue to produce limited growth.

Douglas-fir pole stands with high stem counts have also developed in many other areas in the watershed. This has crowded out less shade tolerant species such as the pines, oaks, madrone, Ponderosa and Sugar pine. California Black Oak and Pacific madrone are mid-seral species that thrive under less dense and more open canopy conditions, conditions that were more common in the watershed's forests prior to human intervention and alteration of historic fire cycles and patterns. In addition to individual tree growth stagnation, stands consisting of dense poles or small diameter trees are more vulnerable to a stand replacement wildfire.

Port-Orford Cedar is present within the project area. The species is located on BLM land in the riparian area along Squaw Creek (T38S,R8W, Sec. 4 and 9) and on private land in the riparian area of Clear Creek, (T38S, R8W, Sec. 2) near the junction of Clear Creek road and highway 199. It is also located within the Eight Dollar Mountain ACEC where no treatments are planned. Port-Orford cedar root disease (*Phytophthora lateralis*) has not been observed in the project area.

#### b. Environmental Consequences

##### 1) Alternative 1: No Action

##### a) Short and Long Term Effects

Current trends of reduced tree crown ratios and slow stand growth will continue and many high density mid-seral stands will remain in the lower range of merchantability. Without disturbance that thins these stands, the slow diameter growth will prolong the time it takes for the densely growing small diameter trees to attain large diameters. The development of the structure and differentiation necessary to ultimately provide quality late-successional forest habitat or to provide quality merchantable trees for future harvest will be greatly constrained. High mortality rates of trees with diameters less than 6" DBH will continue. Those forest stands with high stem counts and small diameters will not reach even a marginally commercial size (8" DBH) within even twenty years. The project area will also continue to remain in a high fire hazard condition and highly susceptible for a stand replacement fire. Were a stand replacing fire to occur, the mid and mature seral stages could be reverted back to early seral stages if the intensity is high.

##### b) Cumulative Effects

The area will be vulnerable to repeated stand replacement forest fires whenever fire hazard rebuilds. There will be a continued loss of large hardwoods and pine species due to competition. Crown size and height-diameter ratios in many stands in the Anderson West project area are currently approaching a point that will render them incapable of a thinning growth response sufficient to maintain healthy, vigorous trees

and stands. As a consequence of this, opportunities for effective stand treatments to maintain health and vigor may diminish rapidly if stands are left untreated over the next 10 years.

## 2) Alternative 2: Proposed Action

### a) Short and long term

The 25 acres of structural retention treatment (regeneration harvest) will regenerate new stands beneath the older, slower growing, large trees that will result in more stands with productive understories.

The proposed thinning treatments will lead to the development of more multi-canopy structure than if left untreated. Canopy closure will average 40% over the harvested area immediately after thinning. The proposed action will result in a level of disturbance necessary to provide growing space for the formation of additional canopy layers due to variability in spacing and species selection criteria being emphasized. Growth rates which are currently slowing will increase. Tree vigor and resiliency to insect and disease attack will be enhanced as competition decreases. There will be an increased commodity potential on treated lands.

Brushing, pre-commercial thinning and thinning in young stands results in the sites' moisture, nutrients, light and growing space being available to fewer trees thereby accelerating growth rates of the residual trees. Both the release and thinning treatments will advance small diameter conifers and hardwoods into and through the pole stage more quickly than would occur in an untreated stand.

### b) Cumulative Effects

The reduction of stand densities combined with associated fuel treatments will lower the probability of a stand replacement fire. Future commodity potential will be enhanced. In commercial thin and group selection units, the development of mature forest characteristics will be accelerated by improving canopy layers and growth rates. Accelerating the development of mature conditions in these stands will, in the longer term, result in a lower degree of fragmentation of this seral stage across the lower part of Deer Creek watershed while meeting the overall land allocation management objectives which includes timber production. Stand development in most forest stands within the project area will be redirected toward developing multiple canopy, species, and age/diameter class conditions and variability in spacing.

## 3) Alternative 3: Proposed Action

### a) Short and long term

Alternative 3 effects would be similar to those of alternative 2 for those units in common to both alternatives. On the 362 harvest acres where the proposed treatments differ, approximately one-third less volume would be harvested under alternative 3 than under alternative 2. Stem densities will not be reduced to levels where individual tree growth is maximized. Maximum individual tree growth benefits of density reduction would be delayed for those acres thinned to only a 60% canopy level and higher stand density indexes. The current competition induced decline in pine and hardwood species in all size classes and also the large conifers would continue.

Thinning to retain a 60+% canopy closure will result in greatly narrowed choices with regard to tree selection. This translates into less opportunity to shift stands that are currently within the range of a Pine series from their current declining trend due to DF encroachment. Sixty percent canopy retention also

increases the number of hang ups during logging resulting in increased damage to residual trees, increased salvage of damaged trees and increased logging expense (e.g., helicopter maneuvering time).

#### b) Cumulative Effects

Stands thinned to a 60% canopy cover objective would be likely need commercial thinning again within the next 5-10 years.

#### 4) Alternative 2 and 3: Port-Orford Cedar

Squaw Creek - The riparian area of Squaw Creek where Port-Orford Cedar is located is adjacent to a area proposed for a mosaic wildlife habitat enhancement burn. No activity is anticipated in this area and there should be no effect on this POC.

Clear Creek - The few POC trees found in Clear Creek on private property are upstream from the public concrete bridge that is used to reach highway 199. Some logs hauled from the Anderson West project would be hauled on this route.

Since there is no POC within the BLM units proposed for harvest or vegetation treatments, the potential for introduction or spread of the Port-Orford cedar root disease is nil. The potential for spread to the Clear Creek locations due to hauling along this public road is also nil as there are no Port-Orford Cedar trees being cut or removed or located in the project units tributary to this road.

### **3. Resource: Fisheries / Aquatic**

#### a. Affected Environment

Deer Creek, Anderson Creek, Clear Creek, Hegan and Squaw Creek are the major project area streams within Lower Deer subwatershed. Draper Creek and Deer Creek are the major project area streams within Deer-Draper subwatershed. Quedo Creek, and McMullin Creek are the major project area streams within McMullin subwatershed. Fish species located in these streams include chinook salmon, coho salmon, winter steelhead, cutthroat trout, Pacific lamprey and sculpin. Coho salmon are federally listed as threatened and Pacific lamprey are a Bureau tracking species in Oregon. Klamath Mountain Providence Steelhead were ruled not warranted for listing in March 2001.

The majority of Anderson Creek, which flows into Clear Creek, is located in the project area. Units proposed for treatment in section 35 are adjacent to Anderson Creek, which contains chinook, coho, winter steelhead and cutthroat through the section. Units proposed for timber harvest in the SE1/4 of section 35 are less than 0.13 of a mile from coho habitat in Anderson Creek, but have ephemeral streams draining from the units into intermittent streams which flow only during storm events. Units proposed for treatment in the NE1/4 of section 35 are 0.5 mile from Anderson creek, in which coho are present. Ephemeral streams and intermittent streams which only flow during storm events flow from these units. Units proposed for treatment in the NW1/4 of section 35 are between 0.25 mile and up to about 250 feet from Clear Creek in which coho are located (the closest distance is at the corner point of a section). Coho and steelhead are present in Anderson Creek in section 25 just downstream of one proposed unit and between 0.13 and 1.0 mile from other proposed units in section 25. Cutthroat are present in Anderson Creek through section 25, which flows through unit 7. Clear Creek contains chinook halfway through section 34 and coho, steelhead and cutthroat through section 34. There are no drainages leading from units in section 35 or section 3 to Clear Creek. The commercial harvest units in sections 3, 4 and 34 are

located more than one mile away from coho.

Units proposed for harvest in section 25 are also drained by tributaries which flow approximately one mile to Draper Creek where coho, steelhead and cutthroat are present. Units in section 35 proposed for harvest have a drainage leading to Draper Creek about 0.65 miles away.

Hegan Creek drains units proposed for timber harvest in section 23, but no fish are present adjacent to the units. The closest known fish presence is in Deer Creek, which is approximately 2 miles downstream.

Quedo Creek flows into Lake Selmac and contains cutthroat within the lower 0.5 mile, which is 1.5 miles downstream from the units proposed for timber harvest in section 23. No fish are present in the reaches of Quedo Creek adjacent to timber harvest units proposed in section 23. Lake Selmac supports resident rainbow trout and warm water fisheries. The outlet of Lake Selmac flows to McMullin Creek where coho, steelhead, and cutthroat are present. No units proposed for treatment drain directly to McMullin Creek.

Squaw Creek and Deer Creek are located in the grazing allotment in sections 3, 4 and 9. Squaw Creek is a tributary to Deer Creek and has sculpin, cutthroat trout, steelhead, and coho. Steelhead are limited to the lower 0.5 mile of Squaw Creek due to an impassable dam. Coho are present in Squaw Creek in the lower 0.13 mile, which is contained in the grazing allotment.

The portion of Deer Creek located in the grazing allotment (section 9) provides important spawning and rearing habitat for chinook and coho salmon as well as winter steelhead. In addition, this area provides habitat for Pacific lamprey, cutthroat trout and sculpin.

Deer Creek is on the DEQ 303(d) list as a water quality limited stream based on the seven day moving average of daily maximum water temperatures. The DEQ water quality standard is 64°F. Deer Creek had a seven day average of daily maximums of 76.4°F in 1999 and 80.2°F in 1998. Draper Creek had a seven day average of daily maximums of 61.6°F in 1995, 62.5°F in 1996, 63.6°F in 1997 and 63.6°F in 2001. Squaw Creek had a seven day average of daily maximums of 68.9°F in 1999. Anderson Creek is also water quality limited due to warm summer temperatures.

The Oregon Department of Fish and Wildlife (ODFW) has identified fish habitat benchmark standards. These benchmarks provide a means of assessing the quality of different components of fish habitat in a stream system. It also provides a means of identifying limiting factors for trout or salmon production and survival. The benchmarks provide standards for large wood, pool depth and frequency, water flow, temperature, and riparian condition. The figures presented below represent averages for conditions on both BLM and private lands.

The ODFW benchmark rates streams consisting of greater than 15% silt-sand-organics as undesirable. Anderson Creek consists of 52% silt-sand-organics, which is undesirable. Draper Creek consists of 64% silt-sand-organics, which is undesirable. Deer Creek consists of 11% silt-sand-organics, which is desirable.

The benchmark rates streams with a width to depth ratio less than 10 as desirable and streams with a width to depth ratio greater than 30 as undesirable. The width to depth ratio in Anderson Creek is 6.03, which is desirable. The width to depth ratio for Draper Creek is 5.53, which is desirable. The width to depth ratio for Deer Creek is 27.0, which is just below the undesirable ratio.

The benchmark for large woody debris pieces per mile rates streams with less than 160 as undesirable

and streams with greater than 320 as desirable. Deer Creek has 34 pieces per mile, which is undesirable. Anderson Creek has 20 pieces per mile, which is undesirable. Draper Creek has 94 pieces per mile, which is undesirable.

The benchmark for large woody debris volume rates streams with less than 20 m<sup>3</sup>/100m of stream as undesirable and streams with greater than 30 m<sup>3</sup>/100m of stream as desirable. Anderson Creek has a large woody debris volume of 2.0 m<sup>3</sup>/100 m of stream, which is undesirable. Draper Creek has a large woody debris volume of 23 m<sup>3</sup>/100 m of stream, which is slightly above the undesirable level. Deer Creek has a large woody debris volume of 7.7 m<sup>3</sup>/100 m of stream, which is undesirable.

The benchmark for pool area (% of total stream area) rates streams with less than 10% as undesirable and greater than 35% as desirable. Anderson Creek is comprised of 21.4% pools, which is between the undesirable and desirable benchmarks. Draper Creek is comprised of 41% pools, which is desirable. Deer Creek is comprised of 14.5% pools, which is between the undesirable and desirable benchmarks.

Salmon production and survival are limited in Deer Creek watershed by inadequate amounts of large woody debris, the lack of meander, channelization of the stream, sparse riparian canopy, and poor summer water quality. Key pieces of large woody debris are absent in the majority of streams.

Irrigation withdrawals on main stem Deer Creek upstream of the project area are significant contributors to low water levels in streams throughout the lower portion of the watershed.

b. Environmental consequences

1) Alternative 1: No Action

a) Short term (< 10 years)

Road sourced sedimentation in the Clear and Anderson Creek watersheds is not expected to change from its current low levels. Currently, sedimentation within the project area is primarily due to the lack of riparian vegetation on private land and consequent stream bank erosion.

The current vegetation trends would continue and, in the short term, there would be little change of the fisheries conditions. While the seral stages in the riparian reserves would continue to advance, the size and amount of wood added to the stream would negligibly increase in the short term. Old logging roads and trails in the riparian areas which are compacted and not yet revegetated would remain in an unrecovered state. Salmonid production and survival would continue to be limited by lack of large woody debris, the associated low stream complexity, and high summer water temperatures.

For the past 6 years the level of grazing has been less than what is permitted under the grazing allotment. A full resumption of grazing at the levels permitted by the Deer Creek allotment could occur under the no action alternative as a currently permitted use. Resumption to the full permitted grazing levels could have an adverse effect on the fishery due to the poor fence conditions. The existing fencing allows cattle into the riparian areas with the consequence of direct impacts including soil compaction, vegetation loss, stream bank degradation and erosion.

b) Long term (10+ years)

Road sourced sedimentation impacts would be the same as for short term impacts.

As the seral stages in the riparian reserve continue to advance, the size and amount of wood added to the stream would increase in the long term (50-100+ years). This would result in increased pool frequency and depth, improved stream complexity, and an increase in rearing habitat quality. There would be an increased canopy cover and stream shading. Riparian logging roads and trails within intact stands would begin to decompact and revegetate reducing potential runoff and erosion. This in turn would contribute to improved salmonid habitat conditions production and survival by improving riparian structure, decreasing summer water temperatures and improved and stream habitat complexity. The cumulative benefit contribution would be slight at the 6<sup>th</sup> and 5<sup>th</sup> field watershed levels due to differences in private land ownership objectives and management practices.

The slow long range recovery scenario presented above would be altered in the event of a stand destroying fire. Where streams flow through high hazard areas. The riparian reserve would probably experience a severe burn in at least some areas over the long term. The effects to hydrology presented in the soil/water analysis would likely be dispersed over time and on non-contiguous drainages across the sixth field watershed level. As a result, impacts to fish and aquatic habitats would be anticipated to be minimal on all but the localized, short term scale.

## 2) Alternatives 2 and 3: Proposed Action

### a) Short term (< 10 years)

#### (1) Roads

Road work will include decommissioning 0.1 mile of road inside the riparian reserve. The creek next to this road drains to Quedo Creek, which drains to Lake Selmac.

There will be 1.4 miles of road maintenance within the riparian reserve:

#### RD 37-8-25 (gravel surface)

- Crosses Anderson Creek (intermittent at this point).
- Crosses an intermittent tributary 0.2 mile from Anderson Creek
- Crosses an ephemeral tributary 0.15 mile from Anderson Creek

#### RD 37-8-35 (natural surface)

- Crosses four ephemeral tributaries, 0.25 to 0.6 mile from Anderson Creek.
- Crosses 1 intermittent tributary, 0.7 mile from Anderson Creek.

Renovation, which does not include culvert replacements, will occur within the riparian reserve for 0.1 mile on an intermittent stream crossing 1.25 mile from Anderson Creek

Approximately 0.6 mile of new spur road construction located on ridge tops and midslopes outside of riparian reserves are proposed. The 0.6 miles of road, which will be decommissioned following use, is made up of three separate roads. One proposed spur road to be constructed and decommissioned is located approximately 0.25 mile from Clear Creek, but is located on a ridge top with no drainages leading from the proposed road to Clear Creek. The two remaining spur roads to be constructed then decommissioned are located 1.6 miles from Deer Creek and do not cross any streams, including ephemeral draws. No new permanent roads will be constructed in the riparian reserve or the matrix. All

newly constructed roads will be decommissioned following use.

It is anticipated that the short term beneficial effects from road maintenance, renovation, and/or decommissioning will maintain downstream salmon survival and production. Short term beneficial effects from road activities include sediment reduction, improved road conditions for peak runoff flows, and better drainage. Road density would be reduced as the result of decommissioning 0.5 mile of road in the matrix.

Minimal, insignificant, short term pulses of sediment may occur from road maintenance, renovation, and decommissioning but are not likely to adversely affect fish or fish habitat. The amount of sediment delivery would be so small as to not cause an increase in streambed embeddedness, an increase of fines in the gravel, or turbid water. Road maintenance and/or renovation will have negligible effects to salmonid migration, spawning, egg incubation, rearing, and feeding. Sediment delivery associated with road maintenance and renovation will not cause significant degradation or modifications to fish habitat.

The operator spur roads to be constructed and decommissioned are short and discontinuous in nature. They are located on stable ridge tops and midslopes and will not affect floodplain connectivity. Sediment delivery will be negligible, due to the location of the roads on ridge tops and midslopes. Road density will not be increased, because the roads will be decommissioned following use.

The use and subsequent decommissioning of pre-existing but unrecovered skid roads and landings in the riparian reserves will provide a short term benefit for aquatic resources by reducing sediment delivery and re-establishing canopy cover on riparian roads.

The construction and decommissioning of operator spur roads will have negligible effects to riparian habitats, stream habitats, and hydrologic function at the sixth field level because of their location on stable ridge tops and midslopes. Sediment delivery associated with operator spur road construction and decommissioning will not cause degradation or modifications to salmonid habitat, because sediment delivery would be short-term and minimal in quantity. These actions would not be likely to adversely affect salmonids as they complete their life history requirements such as migration, spawning, egg incubation, rearing and feeding.

## (2) Vegetation Treatments

The only burning that would take place adjacent to a fish bearing stream is a wildlife burn (mosaic burn) which would be kept outside of a 250' buffer on Squaw Creek. Burning could occur adjacent to two perennial streams located 1.25 mile from Anderson Creek and 2.0 miles from Deer Creek. Burning could occur outside of 50' of 3 intermittent streams from Anderson Creek and through 2 ephemeral draws 0.1 mile from Anderson Creek.

Small woody material would be consumed in the fire, but large coarse woody material would be left intact. During underburns in riparian areas, higher fuel moisture and relative humidity combine to slow the movement of fire, reducing the risk of mortality of large trees and consumption of snags and large down wood. The low intensity fire would most likely not result in the mortality of large trees or the falling of snags, therefore the future recruitment of large woody debris and shade would not be adversely affected by the application of prescribed fire in the riparian reserve. The future recruitment of large woody debris would not be reduced, therefore having no adverse effect on future instream habitat conditions or present shade cover. Sediment and ash are highly unlikely to reach fish bearing streams, as the only burning that would occur on a fish bearing stream would have a 250' buffer. The low gradient of the units proposed for burning would trap sediment and/or ash allowing only negligible amounts to be delivered downstream

to fish habitat.

There are no proposed harvest units adjacent to fish bearing streams. Commercial harvest would occur along 0.2 mile of a perennial stream 1.25 mile from Anderson Creek and along 0.5 mile of a perennial stream 2.0 miles from Deer Creek. Units proposed for timber harvest range from less than 0.1 mile to 1.0 mile from a fish bearing or fish habitat. Intermittent streams, ephemeral draws and ephemeral draws flowing into intermittent streams drain from these units. Limited harvest could occur outside of 75' on an intermittent stream 0.2 mile from Anderson Creek. The units closest to fish habitat, which are less than 0.2 mile from Anderson Creek, are characterized by slopes of 35% or less. Two intermittent streams are present in the units. An additional intermittent stream is located in a unit with flat terrain approximately 0.2 mile from a fish bearing stream.

Potential effects to streams from thinning within the Riparian Reserve are anticipated to be highly localized, unmeasurable, negligible, and short term at the project level (6<sup>th</sup> and 7<sup>th</sup> field scales) and fifth field scale. The amount, timing and duration of sediment delivery would be so small and of short duration that it would not kill aquatic insects used as food and would not embed spawning gravels effecting the eggs and alevins. The turbidity would be within the range of natural variability for the streams affected. Further, the sediment would be delivered during winter run-off periods when flows are higher, thereby reducing adverse effects to fish. Retention of shade on perennial streams would prevent stream temperature increases. It is anticipated that the beneficial effects would maintain downstream salmon production and survival. The effects to fish or fish habitat are not likely to be adverse because of the efforts to eliminate sediment delivery mechanisms and disturbance through project design features.

Based on an analysis of the above effects, we have determined that the effects of the proposed actions would not likely disrupt normal behavior patterns such as migration spawning, egg incubation, rearing and feeding. Significant modifications or degradations of habitat would not occur. The habitat is expected to improve as late-successional characteristics are achieved.

There are no proposed units for slashbuster adjacent to fish bearing streams.

Effects from slashbuster and subsequent underburning would be highly localized, unmeasurable, negligible, and have short term impacts. Streambank stability would be maintained with the tracks of the slashbuster stopping at 75'. Due to the fact the tracks are riding on an 8 - 12" layer of shredded /chopped vegetation, only 2 - 4% of the project area would have signs of soil compaction. The weight of the slashbuster and the amount of direct contact with the soil would be negated due to an estimated 4 - 8" of continuous shredded vegetation left on the soil surface and large tires. This would result in the reduction of surface disturbance, erosion and sedimentation, and soil compaction.

### (3) Grazing

Restricting cattle from the riparian reserve through either removal of the Eight Dollar Mountain and the Creek Pastures from the allotment or fencing riparian reserves and developing off channel water sources would eliminate direct and indirect pollution (sediment, animal waste). It would positively contribute to water quality improvement and meeting the ACS objectives.

#### b) Long term (> 10 years)

##### (1) Roads

It is anticipated that the long term beneficial effects from road maintenance, renovation, and/or decommissioning would maintain downstream salmon survival and production. During road renovation, cross drain culverts may be replaced and sized according to 100-year flood criteria. Decommissioning roads would increase infiltration and decrease overland flows and in the riparian reserve allow the reestablishment of riparian vegetation. Road decommissioning would not affect the floodplain connectivity because riparian reserves would be maintained and stream channels would not be altered. Long term beneficial effects from road activities include sediment reduction, improving road conditions for peak runoff flows, and better water drainage. The reduction in sediment delivery would aid egg and juvenile fish survival because the risk of egg suffocation would be lower. The risk of direct or latent mortality to juvenile fish from sediment delivery are decreased when compared to the no action alternative. The use and subsequent decommissioning of pre-existing but unrecovered skid roads and landings in the riparian reserve would provide a long term benefit for aquatic resources by reducing sediment delivery and re-establishing canopy cover on riparian roads.

No long term adverse affects to fish are anticipated. The proposed road work would have short term affects and would not have a long term adverse impact on water quality (temperature, sediment), channel condition and dynamics (floodplain conductivity, stream bank condition), flow/hydrology (peak/base flows, drainage network increase), watershed condition (road density and location, riparian reserve function).

## (2) Vegetation Treatments

Potential adverse effects are limited to the short term scale, that is, highly localized, negligible, short term impacts at the project level (6th and 7th field scales) and fifth field scale. The proposed action includes thinning with the riparian reserves to accelerate the development of late-successional or old growth forest conditions. Late-successional forest conditions in the riparian reserves would be characterized by increased structural diversity, canopy, and large woody debris recruitment, with improved stream complexity and water quality. Salmon production would be likely to increase as improved channel function results in increased adult holding areas and improved gravel retention. Sediment reduction in spawning gravels and improved water quality would increase egg survival. Improved rearing habitat resulting from lower summer water temperatures and increased pool quality would increase the probability for juvenile survival.

It is anticipated that the long term beneficial effects would maintain downstream salmon production and survival.

## (3) Grazing

The proposed grazing restrictions would have the same beneficial effects in the long term as stated in the short term effects. The long term benefits would be to move the riparian reserve toward the obtainment of ACS objectives for riparian function, especially water quality (temperature, sediment), channel condition and dynamics (floodplain conductivity, stream bank condition).

### c) Cumulative effects

#### (1) Roads

No cumulative adverse affects from these proposed actions are anticipated. The production and survival of salmonids would be maintained.

Earth movement associated with suppression efforts on the Biscuit Fire along Squaw Creek and the west side of section 35 along with impacts from the proposed action were analyzed for potential cumulative effects. No cumulative effects are anticipated from the spur road construction and decommissioning in section 35 due to the ridge top location and the absence of sediment delivery mechanisms. Short term sediment inputs associated with the proposed road maintenance and renovation combined with fire suppression activities such as fire line construction and burnout should not result in a cumulative adverse impact due to the timing, duration and widely dispersed nature of potential sediment sources.

## (2) Vegetation Treatments

The cumulative direct and indirect adverse effects are minimal or negligible in these alternatives because of the efforts to eliminate sediment delivery mechanisms and disturbance through project design features. The Deer Creek Watershed's poor riparian structure, inadequate large woody debris, elevated summer water temperatures, sedimentation, and irrigation withdrawals have contributed to a decline in salmon populations. The adverse impacts of actions outside federal lands are likely to contribute to the decline toward degraded habitat due to increasing summer water temperatures, increasing sedimentation, reduced riparian condition, and diminished stream complexity. However, if the proposed actions (Alternatives 2 or 3) are taken, riparian areas on federal land would have the opportunity for degraded or at-risk habitat conditions to recover.

Adverse effects of the Biscuit Fire to the Deer Creek Watershed are not currently known. It is unlikely that any potential minimal adverse effects of the proposed vegetation treatments would increase the potential adverse effects of the fire on the watershed scale as the proposed actions would be dispersed, discontinuous, and localized.

## (3) Grazing

No adverse effects are anticipated from the proposed grazing restrictions and watering improvements. The beneficial effects which have been identified are unlikely to be apparent on any scale greater than the project level as the stream and riparian segments to be protected are short and discontinuous.

# 4. Resource: Wildlife - special status/ S&M species and habitats

## a. Introduction

The Anderson West project is located in the lower portion of the Deer Creek 5<sup>th</sup> field watershed. The BLM manages 29,924 acres of land in the watershed with a majority of it dominated by forest with small inclusions of non-forested areas. Past land management actions include grazing, mining, road construction, and timber harvest. Land management action within the project area has been more limited with moderate amounts of timber harvest and grazing.

There are approximately 16,394 acres of BLM administrated land in the upper portions of the Deer Creek watershed in the Late-Successional Reserve land allocation. A primary purpose of this allocation is to provide habitat for late-successional forest species. Currently, there are 1,463 acres (9%), on BLM and Forest Service administered forest land, functioning as northern spotted owl (*Strix occidentalis caurina*) nesting habitat (McKelvey class #1) and 5,333 acres (33%) of spotted owl roosting and foraging habitat (McKelvey #2). There are an additional 9,209 acres (56%) that are expected to ecologically recover to function as spotted owl habitat in the long run within the LSR. Additionally, the USFWS has designated 16,276 acres of Critical Habitat for the northern spotted owl in the Deer Creek watershed. A majority of

this is within the LSR, but a portion is in the adjacent matrix lands. The remainder of the lands located in the watershed are designated as matrix, Administratively Withdrawn Areas, riparian reserve or northern spotted owl cores. There are 7 owl cores located in the Deer Creek watershed.

Habitats within the project area include woodlands, riparian, meadows, late-successional forest, snags, down wood, Jeffrey Pine savannahs, serpentine meadows and brushfields. Habitat for a number of sensitive species exist including the northern spotted owl (*Strix occidentalis caurina*), red tree vole\* (*Arborimus longicaudus*), great gray owl (*Strix nebulosa*), mollusc, Del Norte salamanders\* (*Plethodon elongatus*), Northern goshawks (*Accipiter gentilis*), and other raptors as well as all five species of Survey and Manage bat species. (\* these species have been detected).

Surveys have been completed for all S&M species. Potential habitat does exist in the project area for some of these species. The following discussion of impacts would be based on alteration of potential habitat. For the purposes of the discussion, it would be assumed that these habitats are occupied. As a result, the actual effects would be equal to or less than what is presented.

## b. Habitats

### 1. Affected environment - project level scale

The project area is located near the western boundary of the Deer Creek watershed. It lies adjacent to the US Forest Service designated Squaw Mountain roadless area (7,932 acres). The majority of the proposed project is located west of Highway 199 where serpentine soils strongly influence vegetation types and habitats. The majority of the project area is dominated by grass and shrub lands with patchy forested stands distributed across the landscape.

The proposed project area incorporates approximately 2,718 acres. Timber harvest is proposed on approximately 680 acres under both action alternatives, of which 327 acres is late-successional forest habitat (Based on McKelvey Ratings 1 & 2 for northern spotted owl habitat quality). Most of the stands are dominated by Douglas-fir and ponderosa pine plant associations. For many of the stands, the proposed project would be the first direct management treatment that has occurred within them.

These forests provide habitat for a variety of late-successional forest associated wildlife species such as the northern spotted owl, northern goshawk, red tree vole, brown creeper and hermit warbler. This old growth / mature forest habitat is located sporadically across the project area due to inclusion of serpentine soils which results in a naturally fragmented forest landscape. These forested stands provide a stepping stone pattern of connectivity for species associated with older forest from the East IV/Williams LSR to the Briggs and West IV LSR. As a result the habitat and connectivity corridor/refugia they provide are important for late-successional dependent species. In particular, the BLM lands in T38S-R08W-Sec 3 and T37S-R08W-Sec 35 are critical for wildlife dispersal between the Deer Creek drainage and the Kalmiopsis wilderness (Deer Creek Watershed Analysis, 1977).

Non-forest habitats such as serpentine meadows, chaparral, oak woodlands and Jeffrey Pine savannahs are prevalent in the project area. These habitats are partially dependent on fire for maintenance and restoration. The majority of these lands have not burned for more than 50 years (2 - 7 times the normal fire return interval) and are currently at the edge of what might be considered the natural range of condition. Within the project area 259 acres burned during the Biscuit Fire (2002), mostly at a low burn severity. Meadows, chaparral brush fields and oak woodlands provide habitat for a number of species and are especially important areas for migratory and resident birds. Species of concern (Oregon state

listed) associated with these habitats include acorn woodpeckers, *Melanerpes formicivorus*, flammulated owls, *Otus flammeolus*, Northern pygmy owls, *Glaucidium gnoma*, Northern saw-whet owls, *Aegolius acadicus*, Western bluebirds, *Sialia mexicana*, and other birds; the sharptail snake, *Contia tenuis*, California mountain kingsnake, *Lampropeltis getulus*, ringtails, *Bassariscus astutus* and other species. Many of these species are also closely associated with adjacent riparian areas. The yellow warbler, *Dendroica petechia*, is a riparian obligate and is a species with a documented population decline.

The condition of riparian vegetation varies greatly in the watershed due to past land management practices. Areas where adjacent upland units on BLM land have been logged using clear cut methods are present in T37S-R8W-Sec 25 and T38S-R8W-Sec 23. Here riparian vegetation is early seral with a narrow band of late-seral (approximately 20' wide). In general these areas do not provide quality dispersal habitat for many species. Other portions of the drainage that have never been entered for timber harvest (e.g., T37S-R8W-Sec 34 and T38S-R8W-Sec 3) have riparian vegetation which provides dispersal habitat for late-successional species.

A mine adit located in T38S-R8W-Sec 4 provides habitat for a number of sensitive bat species. The mine appears to be stable and remote enough that it does not receive much human disturbance.

## 2. Environmental consequences to habitats

### a) Alternative 1: No Action

The no action alternative would, potentially, be both favorable and harmful to wildlife species. Late-successional forest habitat levels would continue at their current rate providing habitat and dispersal opportunities for late-successional dependent species. Snag and down wood cycling would continue at its current rate. Species utilizing this habitat such as the Pileated Woodpecker would benefit from continued recruitment of snags. The forest maturation process would continue at the current rate. Development of larger trees and canopy layers would continue at their current rate.

Stand development patterns would, however, continue to differ from the patterns of the pre-fire suppression period (natural disturbance regimes). Forest fuels would continue to accumulate. Fire hazard conditions in understory and surrounding vegetation would continue to put the existing late-successional, mature forest habitat at risk for a stand replacing fire.

The actual affects of a potential wildfire are impossible to gauge. Late-successional forest habitat can be benefited or devastated by a fire depending on the intensity. A moderate ground fire may benefit late-successional forest by creating gaps in the canopy, encouraging shade intolerant tree species and increasing the forest complexity. Under the no action alternative, shade tolerant tree species that are high fire tolerant (e.g. California black oak, Oregon white oak and pines) would continue to be lost from the stand. Stand structure complexity would continue to be simplified by the loss of tree species such as Pacific madrone and California black oak that create horizontal structure. Species utilizing these tree species for mast and berry crops, as well as cavities and nesting structure would lose habitat.

Early seral forested stands would continue to develop on their current successional trajectory. Species utilizing early forest conditions, such as elk, would slowly lose their current level of browse through succession.

Pine, oak, Jeffrey pine savannahs and serpentine meadows would continue their declining trend for both extent and vitality due to the invasion and encroachment by fire intolerant species. Current trends in

habitat change of these plant associations adversely affect wildlife species like the flammulated owl, western blue bird and violet green swallow. These bird species prefer the white oak and ponderosa pine plant associations for nesting and foraging and have been experiencing population declines in the past 10 years (Andelmand and Stock 1994).

Riparian areas and associated upland vegetation would continue to develop at their current rates. Areas dominated by early seral vegetation would continue to hinder the dispersal of species associated with older forest but would provide habitat for species associated with early seral vegetation. Areas with mature/old growth forest would provide for quality dispersal habitat for species associated with older forest.

The area would continue to provide low elevation older forest conditions that offer refugia for late-successional forest species. It would also continue to provide a stepping stone of older forest habitats and the resultant biological link between the Squaw mountain roadless area and the East IV/Williams LSR.

b) Alternative 2 and 3: Action Alternatives

(1) Different effects in Alternatives 2 and 3

(a) Late-successional forest habitat

Alternatives 2 and 3 both propose harvesting of trees on comparable acreages. The ecological outcome is different, however, as it pertains to mature stands that provide late-successional forest habitat. Both alternatives propose treating 327 acres of late-successional forest habitat but at different intensities based on different post harvest canopy closure goals. Alternative 2 will reduce the canopy closure of the stands to 25-40% except within riparian reserves and existing wildlife and botany buffers. This will diminish the ability of the stands to provide any late-successional habitat conditions for 20+ years or until average canopy closure returns to 60%. This reduction of late-successional habitat would adversely affect late-successional species through habitat loss and fragmentation. Species associated with late-successional habitat would lose potential nesting, foraging and resting areas. The opportunity for wildlife with large home ranges such as the northern spotted owl, to occupy the area would most likely be lost in the project area. Species with smaller home range requirements such as the red tree vole may be able to persist in the project area in riparian reserves and denser patches of suitable habitat, but may be isolated from other such populations.

As noted, the resultant canopy closure under alternative 2 would vary between 25 and 40%. Forty percent canopy closure is considered to be at the lower range of dispersal habitat for northern spotted owls. After thinning these stands or portions of these stands, they may provide marginal dispersal habitat for highly mobile late-successional wildlife species such as the spotted owl. However, for lower mobile species these stands will no longer provide connectivity for the next 20+ years, or until the canopy recovers. On the whole, the stepping stone connectivity between the East IV/Williams LSR and the Briggs and West IV LSR would be further fragmented, particularly through the approximately 340 acres of mature forests in T38S-R08W-Sec 3 and 4. The suitable late-successional forest habitat located on public land managed by the US Forest Service in T37S-R8W-Sec 27, 28 and 32 would remain. Currently, this area is identified as matrix but is located within the Squaw Mountain roadless area and most likely will not be harvested in the short run (next 5 years). The area was also within the perimeter of the Biscuit Fire; burn intensity was low to moderate through most of the area and no spotted owl suitable or dispersal habitat was degraded as a result of the Biscuit Fire (Biscuit Post-Fire Assessment, Rogue River and Siskiyou NF, 2003)

The ability of these thinned stands to provide thermal cover for elk and deer would be lost. Forest stands providing thermal cover also provide security from disturbances and predators. This loss would be particularly pronounced in T38S-R8W-Sec 3 and 4 between Squaw and Anderson creek drainage. These mature stands west of Hwy 199 receive heavy use during the summer months from black-tailed deer. Most of this use occurs on federal land, as there are very few stands that provide good thermal cover on private land. The overall affect on populations is difficult to determine. Generally, winters are mild in the area, but summers can be hot and dry, thereby forcing animals to locate cooler spots during the heat of the day. There would be a declining population trend in local deer populations if these stands no longer provide protection for big game.

Stands harvested under alternative 2 would retain varying amounts of structural components associated with older forest, including a recruitment source for snags/down wood and large trees but would lack the high canopy closure associated with late-successional habitat. The more open conditions may lead to an increase in predation as more generalist species such as the Great horned owl (*Bufo virginianus*) move in and compete with interior forest species. Micro-climatic conditions and micro-sites that some species need may not be met in stands with canopy closure less than 40%. For example the Del Norte salamander and some mollusc species appear to require cool moist forest floors and may be absent from warmer drier conditions that are anticipated post harvest.

Alternative 2 would reduce the amount of late-successional forest habitat in the Deer Creek watershed from approximately 6,971 acres to 6,474, of which 3,837 acres or 59% will remain in the East IV/Williams LSR. (Note that 386 acres in the project area were mis-classified in the Deer creek Watershed Analysis as dispersal when it was actually suitable spotted owl habitat). The largest block of BLM managed late-successional forest habitat west of Hwy 199 in the Deer creek watershed would no longer provide suitable late-successional habitat conditions. Remaining patches of interior late-successional habitat west of Hwy 199 would remain on the Forest Service, with 2 large patches within 2 miles (367 and 205 acres) of the Anderson West project area.

Alternative 3 will focus tree harvest in the suppressed and intermediate suppressed portion of the stand. Post harvest canopy closure would be retained at an average of 60% which is within the threshold range for maintaining late-successional habitat. The stands would continue to provide late-successional habitat conditions. Species associated with late-successional forest such as the northern spotted owl may utilize the area for nesting, roosting and foraging habitat. Connectivity across the landscape would be similar to the no action alternative. The harvested stands would continue to allow movement in a stepping stone pattern between the East IV/Williams LSR and the Briggs and West IV LSR for species associated with late-successional habitat.

Alternative 3 would maintain moderate thermal cover form big game species in section 3 and 4. Average canopies would be retained at 60% with denser canopies associated with riparian reserves, and plant and animal buffers. The trend in big-game populations would be similar to the No Action alternative.

#### (b) Snags

Current snag levels vary within the project area due to the level of past management. Stands that have never been managed for timber are generally rich in snags and exceed the minimum level considered to be optimal for 100% retention (3.1 per acre) but have the potential to have levels impacted by timber harvest. Alternative 2 and 3 will differ on the potential for future snag recruitment. Alternative 2 could reduce stands to canopy closure to 25-40%, which would eliminate a great deal of competition between trees, which leads to future snags. There will be a short increase in snags due to breakage and damaged

trees from the proposed action. Alternative 3 would retain a greater likelihood for maintaining a snag recruitment source than alternative 2. This alternative would retain a higher canopy closure and a higher degree of competition between mature trees. Species associated with snags such as cavity nesters would more likely be retained under alternative 3.

## 2) Similar effects to Habitats (Alternatives 2 and 3)

Tree species that are high fire tolerant and low shade tolerant will be retained in the stand. This includes species such as California black oaks and Pacific madrone that provide the majority of the horizontal structure in the late-successional forest in the project area. These trees improve the overall quality of the forest by producing mast and berries, as well as provide nesting and resting structure for wildlife. They are also host plants for a number of mycorrhizal species that produce fruiting bodies that species such as the Northern flying squirrel (*Glaucomys sabrinus*) uses as a primary food source. In addition, a number of molluscs are known to utilize hardwood litter as food. Retaining these components in the forest maintains a structure more similar to natural conditions.

### c. Young Stand Development

Approximately 103 acres of precommercial thinning/brushing is proposed. The acreage is all located within managed plantations and are composed of early and mid-seral forest stands. Precommercial thinning and commercial thinning stands that currently are not late-successional habitat may accelerate the development of this habitat or place these stands on a trajectory they may lead to a more structurally complex forest. Species which require complex older forest may benefit from this action in the long run.

### d. Road Work

Under alternative 2 and 3 approximately 2 miles of new temporary road would be constructed in the project area. Post-project, the new roads would be decommissioned and blocked. Due to the location of the spurs behind gates and with access through private land it is not anticipated that the roads will receive any increase in traffic. The opportunity for off road vehicles to utilize the decommissioned roadbed is low. There will be a short-term disturbance to wildlife as harvesting and hauling is taking place but it is not anticipated that this will have an overall affect on any wildlife populations.

Both alternatives propose to decommission approximately 0.6 mile of road in T38S-R8W-Sec 23. This section area is currently heavily roaded. Due to its location near the valley floor and mixture of early seral habitats and older stands, the area offers good winter conditions for ungulates such as deer. The decommissioning of the identified roads will improve winter conditions by providing more secluded areas away from human disturbance.

Road maintenance and road improvement in the project area would improve drainage and water quality to the local streams, benefiting aquatic species such as frogs, salamanders and invertebrates. Construction and decommissioning of the operator spurs in section 3 and decommissioning of road 38-8-23.4 in section 23 will result a short term increase in erosion in local water courses. Due to measures taken during the decommissioning process it is anticipated that there will be no major effect to aquatic species.

Access option 1 (preferred) would access T37S-R08W-Sec 35-Units 002 and 003 via the county road system and a private road system. A 1,300' spur would traverse the slope through the middle of unit 2 and unit 1 to access unit 3 on the south end of BLM lands. The spur would be decommissioned at the end of the project. As access is through private lands, additional use of the road by OHVs is not anticipated.

Effects of road construction on species and habitats would be minimal.

Additionally, during Biscuit Fire suppression efforts a firebreak was constructed across the meadow and along rock outcrops in Unit 1. The impact to talus and associated species has been minimal. However, without further work to restore the landscape, erosion potential and sedimentation will be increased.

**Proposed Mitigating Measure #2:** During construction of the spur road, the fire break would be ripped and seeded with native grasses.

Access option 2 (backup) would have the least impacts on wildlife. The harvested logs would be flown via helicopter to landings located in Section 3 and 34. Helicopter landings are already present in this section and new construction would not be required.

e. Environmental Consequences of fuels treatments

a) Alternative 1

Under Alternative 1, the current vegetation trajectory would continue. Stand densities would continue to increase to a point where stagnation and mortality would begin to select out individual trees. Species associated with snags and down wood, such as the woodpeckers would benefit from the increase in habitat. The risk of stand replacing fire would continue to be high. The probability of a stand replacing fire would continue to increase. The affects of a fire would depend on severity. A moderate ground fire may benefit late-successional forest by creating gaps in the canopy, encouraging shade intolerant tree species and increasing the forest complexity. A severe stand replacing fire would lead to loss of late-successional habitat and, potentially, to the localized extirpation of species associated with this habitat.

b) Alternative 2 and 3

The reduction in fuel loading, tree density and ladder fuels will reduce the opportunity for a stand replacing fire in the project area. Under these two alternatives fuel loads would be reduced in the proposed action area. Snags and down wood habitat would be diminished. Species associated with down wood such as the Ensatina salamander (*Ensatina eschscholtzii*) could lose habitat as could some molluscs. The reduction of hazard would lesson the possibility of a stand replacing fire in the proposed action area. The potential loss of late-successional habitat would be lessened.

Habitats such as oak woodlands, serpentine meadows and Jeffrey pine savannahs would be restored towards pre-fire suppression state and would be more within their natural range of conditions. There would be a loss of habitat for some species such as spotted towhee (*Pipilo erythrophthalmus*), but this would be naturally mitigated by the mosaic fashion of the burn. It is anticipated that portions of the units would receive little or no fire, while other areas are burned more intensely. Quality winter range for species such as elk (*Cervus elaphus*) would begin to be restored improving browse conditions for this species. In general the mosaic vegetative nature of the project area and the unique habitat they represent will be restored and preserved, benefiting species associated with these habitats.

f. Environmental Consequences of Grazing

a) Alternative 1: No Action

Under the no action alternative grazing in the Deer Creek allotment would continue on four pastures

totaling 1,165 acres. As previously noted, cattle grazing has not taken place on the allotment since 1996. Consequently the current allotment conditions do not reflect the expected conditions under full grazing. Fencing in the allotment area is in poor condition and for the most part does not exclude cattle from wandering from pasture to pasture or into the streams. Currently cattle have access to Squaw creek, which provides primary habitat for the Foothill Yellow-legged frog (*Rana boylei*), a Bureau Tracking species. This species, an aquatic obligate, is sensitive to poor water quality. Habitat and water quality appear to be sufficient at this time. Due to the lack of proper fencing, habitat for this species most likely will deteriorate if grazing resumes.

Cattle compact soil by hoof action, directly remove plant material and indirectly reduce water infiltration. All of these actions result in decreased vegetation density (Holechek et al, 19889 as referenced in Bock et al, 1993) which has an associated impact on songbird species diversity and abundance. Grazing in the Deer Creek grazing allotment (#0308) ceased in 1996. Since cessation of grazing, riparian habitats have recovered from the effects of grazing within this area. If grazing were to resume, habitat degradation would likely occur and recovery of habitat would be reversed.

Some species respond positively to grazing including aerial foragers associated with open habitats. Among these species are Lewis' woodpecker, *Melanerpes lewis*, and mountain bluebirds, *Salia currocoides*. Other species that respond positively to grazing include ground foragers such as the American robin, *Turdus migratorius*, killdeer, *Charadrius vociferans*, and brown-headed cowbirds, *Molothrus ater*.

Many birds respond poorly to grazing. Of migratory songbirds, the yellow warbler, *Dedroica petechia*, a riparian obligate and the willow flycatcher, *Empidonax trailii*, are highly vulnerable to parasitism by brown-headed cowbirds, a species directly attracted to livestock (Bock et al, 1993). It is also suspected that the yellow warbler has high site fidelity, which can exacerbate the impact on this species through degradation of habitat and subsequent displacement. Other species adversely affected by grazing through loss of ground cover include the common yellowthroat, *Geothlypsi tricas* and Lincoln's sparrow, *Melospiza lincolni*. These species nest and/or forage in heavy shrub or herbaceous ground cover.

#### g. Environmental Consequences to Species

##### a. Northern Spotted Owls

###### 1. Existing environment

There are approximately 6,971 acres of suitable spotted owl habitat and the 16,248 acres of late-successional reserve (LSR) in the Deer Creek watershed. The primary purpose of the LSR as well as the seven 100-acre cores within the watershed is to provide habitat for late-successional species. There are also 16,276 acres of spotted owl Critical Habitat within the watershed, with an additional estimated 3,314 acres of late-successional habitat located outside the LSR in riparian corridors, the seven spotted owl cores and on matrix designated land. There is no designated Critical Habitat within the project area. The project area is outside of any known home ranges of spotted owls, but spotted owl habitat is present in the project area. There are approximately 322 acres of suitable nesting, 140 acres suitable roosting/foraging and 132 acres of suitable dispersal habitat.

###### 2. Consequences

###### (a) Alternative 1: No Action

Under the no action alternative habitat for the Northern spotted owl would remain at its current level. Connectivity from the East Illinois/Williams to the Briggs and West IV LSR would remain at its current level.

(b) Alternative 2 and 3: Action Alternatives

Both alternative 2 and 3 propose to harvest timber in suitable spotted owl habitat. Under alternative 2, harvest would occur on 680 acres. This action would alter these acres of suitable spotted owl habitat from nesting, roosting and foraging habitat to non-habitat. In addition, 132 acres of dispersal habitat would be altered to a point in which it would no longer provide dispersal habitat. Spotted owl nesting, roosting and foraging habitat within the Deer creek watershed would be reduced from 6,971 to 6,499 acres. Spotted owl habitat on BLM managed land in the project area would be restricted to narrow stringers associated with riparian reserves. Many of these stringers would only function as dispersal habitat. Connectivity through the watershed would be further fragmented, but dispersal between the LSRs would not be precluded.

Alternative 3 proposes to harvest the same amount of habitat as described under alternative 2 but would strive to retain a canopy closure of near 60% and maintain the area as suitable roosting/foraging habitat for spotted owls. Connectivity through the watershed would remain as its current level. It is anticipated that those characteristics that make suitable habitat would remain, such as snags, down wood, large trees and a prey base similar to pre-disturbance conditions.

There will be no incidental take of spotted owl in the project area. Suitable habitat will be removed and the project has undergone formal consultation with the U.S. Fish and Wildlife Service (USFWS) who have issued a Biological Opinion (#1-7-01-F-032, 12 October 2001).

b. Red Tree Vole

(1) Alternative 1: No Action

The forest would continue to go through developmental stages towards older forest conditions, which would be beneficial to the red tree vole and other species associated with late-successional forest habitats. The potential for a fire in the project area would remain high.

(2) Alternative 2 and 3: Action Alternatives

The red tree vole is an arboreal species of rodent with very low dispersal capabilities. The broad management objective for this species is to retain sufficient habitat to maintain its potential for reproduction, dispersal and genetic exchange. Surveys for this species have been conducted in appropriate habitat. The red tree vole sites detected have had buffers instituted as per protection measures as outlined in the management recommendations. Alternative 2 would impede dispersal of red tree voles beyond the buffers into other areas until such time as canopy closure recovers to 60%, an estimated 15 - 20 years.

The proposed pre-commercial thinning and brushing throughout the project area, may hasten the development of potential red tree vole habitat in the future which could contribute to the maintenance of the species in the project area and watershed.

c. Northern Goshawks

(1) Alternative 1: No Action

The forest would continue to go through developmental stages towards older forest conditions, which would be beneficial to the Northern Goshawk and other species associated with late-successional forest habitats. Potential local populations would likely be maintained in the project area. The potential for a fire in the project area would remain high.

(2) Alternative 2 and 3: Action Alternatives

Potential habitat for Northern Goshawks (*Accipiter gentilis*) is located throughout the proposed treatment area. Surveys are not currently required or planned for the species. The proposed commercial thinning and regeneration harvest would modify the affected habitat from a nesting to non-nesting condition/quality. It is estimated that 680 acres of nesting habitat would be modified to non-nesting habitat. The affect of the timber harvest may lead to a reduction in the local population of goshawks. The proposed action's precommercial thinning and brushing would hasten the development of potential Goshawk habitat in the future which could contribute to the maintenance of the species in the project area and watershed.

d. Del Norte Salamanders

(1) Alternative 1: No Action

The forest would continue to go through developmental stages towards older forest conditions, which would be favorable to the Del Norte salamanders. The potential for a fire in the project area would remain high.

(2) Alternative 2 and 3: Action Alternatives

Habitat for Del Norte salamanders (*Plethodon elongatus*) would not be affected by the proposed project. Habitat is located throughout the proposed project area. Del Norte salamanders are intricately tied to areas with rock and talus. This type of micro-habitat is sporadically distributed across the landscape, occurring primarily near rock outcrops, ridge tops, and along riparian areas. Surveys had been partially completed for the project area, but have been suspended due to the removal of the species from the pre-disturbance survey and manage list. The species is listed on the state of Oregon vulnerable species list and is also recognized as a Bureau Tracking species. Surveys conducted prior to the change had located a population in section 35. Current management requires maintenance of all known sites until High-Priority have been determined. As of the date of this report, high-priority sites have not been determined and the site will be buffered as described in the PDFs.

e. Great Gray Owl

(1) Alternative 1: No Action

The forest would continue to go through developmental stages towards older forest conditions, which would benefit Great Gray Owls by increasing the amount of nesting habitat. Foraging areas would continue to be encroached upon by fire intolerant plant species reducing potential foraging opportunities. The potential for a fire in the project area would remain high.

(2) Alternative 2 and 3: Action Alternatives

Great gray owl (*Strix nebulosa*) habitat is located in throughout the project area. Locally, Great grey owls have been located nesting in a variety of stand types, but appear to prefer mature park like stands with a closed canopy (>60%) and room for flight is a common factor. Foraging occurs in open stands, old clearcuts, natural meadows, and agricultural land.

Current protocol for this species does not require surveys below 3,000 feet in elevation. Surveys for this species have, however, been completed in the best locations in the project area to protocol standards and no owls were located. It is anticipated that this sale will modify 459 acres of existing habitat in the project area from nesting to non-nesting condition and alter habitat, which would allow predators of the Great Gray Owl to become established within current Great Gray Owl habitat. This could result in a local reduction in the great gray owl population.

f. Songbirds

(1) Alternative 1: No Action

The forest would continue to go through developmental stages towards older forest conditions, which would maintain the current bird community composition. Over time, there would be an increase in numbers of species associated with snags and down logs as well as deep bark and forest gleaners and a decrease in birds associated with early seral vegetation and more open stand conditions. The potential for a fire in the project area would remain high.

(2) Alternative 2 and 3: Action Alternatives

In 1994 a study was undertaken in the Panther Gap Timber sale (near Williams, Oregon) to measure the effects that commercial thinning has on the composition of the songbird community. The stands examined in the study are similar to the stands identified for commercial thins. Stands were measured for abundance and species richness (number of species), pre- and post-harvest. Due to the similarity of the stands it can be assumed that the effects of the two proposed action alternatives will be similar to those observed at Panther Gap Timber sale. Janes (1997) found that winter bird abundance on both south and north facing slopes were near 50% lower post-harvest. Forest gleaners, the dominant group of winter birds, showed the largest declines. Species such as chestnut-backed chickadees (*Parus rufescens*) and red-breasted nuthatches (*Sitta canadensis*) were among this group. It is hypothesized that these species declined due to decrease volume of foliage and bark areas and a decrease in the number of available cavities for roosting and nesting. There was a modest increase in terrestrial insectivorous in particular Winter Wrens (*Troglodytes troglodytes*) which apparently benefitted from the increase level of down wood.

Spring breeding bird populations showed similar results to those of the wintering birds. Species utilizing bark and foliage for foraging showed the greatest decline, while species utilizing down wood and open stand conditions increased. Species showing declines include hermit warblers (*Dendroica occidentalis*) and Nashville warblers (*Vermivora ruficapilla*) as well as several other species. Species showing an increase include mountain quail (*Oreortyx pictus*), hairy woodpeckers (*Picoides pubescens*) and house wrens (*Troglodytes aedon*). Overall it appeared that timber harvest changed structural characteristics in the stands that resulted in decreased habitat for some species and increased habitat for others.

While recognizing that there was no control location for comparison in the Panther Gap study, it is probable that there was a shift in species composition due to the timber harvest activities. There was also a possibility that population declines or reduction in reproductive success may have occurred in species

preferring higher density stands due to displacement or increased competition in nearby intact stands

It is estimated that the composition of the songbird community will return to near pre-disturbance levels in approximately 20 years in the commercially thinned stands.

It is anticipated that structural retention harvest will lead to a greater degree of shift of song bird population away from species requiring high canopy closure and structural conditions such as brown creepers (*Certhia americana*) to species requiring more open conditions such as dusky flycatchers (*Empidonax oberholseri*).

#### h. Molluscs

##### (1) Alternative 1: No Action

The forest would continue to go through developmental stages towards older forest conditions, which would be favorable to molluscs. There would be an increase in habitat conditions for species requiring late-seral conditions. Foraging opportunities for species associated with shade intolerant hardwoods would diminish. The potential for a fire in the project area would remain high.

##### (2) Alternative 2 and 3: Action Alternatives

All lands identified for commercial timber harvest was surveyed for S&M molluscs. None were located. If S&M molluscs are located during project activities the approved management recommendations would be implemented. This group generally requires cool moist environments with the exception of *Helminthoglypta hertleini* which may utilize rocky talus in open exposed slopes. With the implementation of the management recommendations there are no anticipated impacts to these species.

#### g. Bats

##### (1) Alternative 1: No Action

The forest would continue to go through developmental stages towards older forest conditions which maybe beneficial to Bats. Bats utilize both large snags as well as large live green trees as roosts. Under the no action alternative more trees will become snags due to tree mortality through competition. Trees that are small in size generally do not provide the large radial cracks or exfoliated bark that provides bat habitat. Smaller suppressed trees will stay on their current trajectory and will not provide habitat until the stand becomes released through disturbance. The potential for a fire in the project area would remain high.

The mine adit located in T38S-R8W-Sec 4 will continue to provide a secure day roosting location for bats.

##### (2) Alternative 2: Action Alternatives

Snags and green trees that harbor bats will most likely be disturbed by the action alternatives. Because it is not feasible to determine where bats may be roosting in a forested stand, certain forest characteristics need to be preserved to insure persistence of bat species. Snags and large decadent green trees will be preserved in the project area to provide potential bat habitat.

The mine adit located in T38S-R8W-Sec 4 of the proposed project area has not been surveyed for bats

due to safety concern. The site will be assumed to be occupied and protected as described in the PDFs. Due to the buffer there are no anticipated affects to potential bats in the adit.

c. Cumulative Effects.

Implementation of the proposed action would further reduce the amount of northern spotted owl nesting, roosting, and foraging habitat in the Deer creek watershed from 6,971 to 6,499 acres. In addition, approximately 132 acres of dispersal habitat will be modified to no longer function as spotted owl habitat.

Past management activities from county, state, federal and private land managers in the Deer creek drainage have altered historic condition from a landscape dominated by a structurally complex older forest, to a forest dominated by younger stands. The majority of remaining older forest occurs on public lands managed by the BLM and the Forest Service. It is anticipated that 472 acres of older forest and associated biodiversity will be adversely impacted by the proposal in the short run. Stand recovery rates will vary depending on current stand condition, but for the majority of the proposed project it is anticipated that stands will recover to provide older forest conditions in about 20 years. Reduction in the refugia capabilities of these stands, as well as a reduction in the ability of these stands to temporally and spatially function as older forest will be affected, but not eliminated. Reasonable foreseeable action on public land managed by the BLM includes the South Deer Land Management project. It is anticipated that the South Deer project may further reduce the amount of late-successional forest habitat and associated biodiversity outside of the riparian reserve and late-successional reserve system in the Deer creek drainage. Reasonable foreseeable activities on private, county, and state lands would be for continued short rotation time of forest lands.

In 2002, the Biscuit Fire burned nearly 500,000 acres including part of the project area. In 38S-08W-Sec 4 & 9, 259 acres were burned at a light severity. The adjacent Forest Service land burned in the fire has affected late-successional stand characteristics, habitat continuity and corridors for animal dispersal and seasonal migration. None of the Critical Habitat burned and no spotted owl suitable habitat within the Deer Creek watershed was adversely affected in the Biscuit Fire.

While the project itself will have relatively minor effects on species persistence, this project, coupled with past and anticipated future actions will likely adversely impact potential for dispersal and expansion of populations, particularly forest dwelling species that migrate or disperse for long distances, or require late-successional forest stands for successful reproduction. It has been documented that the main cause of loss of bird species is a result of habitat degradation (BirdLife International, 2002). Alternative 3 would better provide resources and habitat characteristics needed for these species.

#### References:

Bock CE, Saab VA, Rich TD and Dobkin DS. Effects of Livestock Grazing on Neotropical Migratory Landbirds in Western North America. Status and Management of Neotropical Migratory Birds, Finch DM and Strangel, PW, eds. 1993.

Holechek JL, Piper RD and Herbel CH. Range Management: Principles and Practices. Prentice Hall, Englewood Cliffs, NJ, 1989.

Kreuper, Dave. Effects of Land Use Practices on Western Riparian Ecosystems. Status and Management of Neotropical Migratory Birds, Finch Dm and Strangel, PW, eds. 1993.

Kreuper, Dave. Response of Vegetation and Breeding Birds to the Removal of Cattle on the San Pedro River, Arizona (U.S.A.). In press.

Non-referenced species habitat data from Natureserve Explorer at: <http://www.natureserve.org/explorer/>

## 5. Resource: Botany

### a. Affected Environment

The landscape in the project area is a diverse mosaic of serpentine grasslands/savannahs, riparian area, shrublands and Douglas-fir forests. The density of special status plants is quite high, because of its location directly north of, and contiguous to the Eight Dollar Mountain Area of Critical Environmental Concern. Also, a small portion in the Illinois Valley Botanical Emphasis area is found within the project area. This is especially true in the serpentine areas of T38S-8W-4 and T38S-8W-9, where Jeffrey pine with grass understory dominates. Besides being proposed for a habitat improvement burn, these sections are within a portion of the Deer Creek grazing allotment.

Surveys for S&M / Special Status vascular and non-vascular plants have been completed throughout the project area. The following table summarizes the species found and their protection status.

Species	Habitat	Protection Status	# Populations Found
<i>Bryoria tortuosa</i> Yellow horsehair lichen	Large pine canopies; manzanita	S&M category D	34
<i>Calochortus howellii</i> Howell's mariposa lily	Dry serpentine savannah	Bureau Sensitive	17
<i>Carex serratodens</i> Two tooth sedge	Wetlands; riparian	Bureau Assessment	1
<i>Crumia latifolia</i> Wide leaf crumia moss	Riparian and intermittent streams	Bureau Assessment	1
<i>Cypripedium fasciculatum</i> Clustered lady's slipper	Moist microsites in mixed evergreen forests	Bureau Sensitive; S&M category C	2
<i>Dendriscoaulon intricatum</i> Northern moonshrub	Moist microsites in mixed evergreen forests usually on oaks	S&M category E	22
<i>Fritillaria glauca</i> Siskiyou fritillary	Serpentine barrens	Bureau Assessment	4
<i>Microseris howellii</i> Howell's silverpuffs	Dry serpentine savannah	Bureau Sensitive	20
<i>Monardella purpurea</i> Serpentine monardella	Dry serpentine Savannah	Bureau Assessment	3
<i>Pseudoleskeela serpentinense</i> Serpentine moss	Rocks in serpentine	Bureau Sensitive	22
<i>Ramalina thrausta</i> Angel hair lichen	Forested habitats with high humidity	S&M category A	1
<i>Senecio hesperius</i> Western ragwort	Dry serpentine savannah	Bureau Sensitive	28
<i>Sulcaria badia</i> Grooved horsehair lichen	Large pine canopies; manzanita	Bureau Sensitive	1

Also, numerous Bureau Watch and Tracking species were found including *Arabis aculeolata*, *Arabis koehleri* var. *stipitata*, *Balsamorhiza sericea*, *Castilleja brevilobata*, *Cypripedium californica*, *Lewisia oppositifolia*, *Smilax californica* and *Thlaspi montanum* var. *siskiyouense*.

Vascular surveys were completed twice within the area of the Deer Creek grazing allotment in sections 4

and 9. Surveys took place in 1995 while grazing was still occurring and again in 2000 after grazing had not taken place for four years. Three Bureau Sensitive species dominate the acreage within the dry serpentine of the allotment. These are *Calochortus howellii* (17 populations), *Microseris howellii* (20 populations) and *Senecio hesperius* (28 populations). These populations are extensive and overlap each other throughout the grassland portion of sections 4 and 9. These species are endemic to the Illinois Valley (i.e. they exist nowhere else in the world) and are usually found on dry, rocky serpentine slopes or sometimes in serpentine savannahs, where grass species may be competing with them. Populations tend to be sparsely scattered when found. Two Bureau Assessment species, *Fritillaria glauca* (4 populations) and *Monardella purpurea* (3 populations) were also found in the dry serpentine in 1995, but not again in 2000. These species are also endemic to the serpentine soils in southwestern Oregon and northwestern California.

The portion of the allotment on Eight Dollar Mountain covers a serpentine fen. The Bureau Sensitive species found within the fen are *Hastingsia bracteosa* (4 populations), *Epilobium oregonum* (1 population), *Gentiana setigera* (3 populations) and *Viola primulifolia* (1 population). This fen is one of only two known fens throughout northwestern California and southwestern Oregon that has this combination of these four species. *Hastingsia bracteosa* is extremely rare and found in only a few of the serpentine fens and a few riparian areas within the Illinois Valley. All known populations are found in the Eight Dollar Mountain/Josephine creek area. The other species are also endemic to serpentine fens and wetlands, but can also be found in such habitat in northwestern California.

The most noteworthy differences between the two surveys within the grazing allotment were related directly to cattle grazing. In 1995, a vernal wet area west of Squaw Creek (on BLM land) was found to be severely trampled from early season cattle grazing. The contractor at that time reported that population densities appeared to be less in the areas of heavy use.

Also, in 1995, the noxious weed, medusa head rye (*Taeniatherum caput-medusae*), was found growing with the native grasses, especially in section 9. Little to no grazing has occurred from 1996 to the present. In 2000, this species was not found. It can be postulated that the removal of cattle certainly reduced trampling of soils within special status habitats and removed one source of this noxious weed. With serpentine soils, some weeds not adapted to such toxic conditions can lose their competitive advantage. Therefore if the introduction source can be eliminated, the weeds can be eliminated in the long run. One weed, star thistle (*Centaurea solstitialis*) can maintain a hold, even in serpentine soils. The species is found along an old road south of the Illinois River road.

The noxious weed, *Cytisus scoparius* (scotch broom), was found along the Illinois River road in section 9 and in several roadside locations in section 35. About 800 to 1,000 plants were found in section 35.

A portion of the grazing allotment north of the Illinois River road burned during the Biscuit Fire. Numerous special status populations in the dry savannah (*Calochortus howellii*, *Microseris howellii*, *Senecio hesperius*, *Fritillaria glauca*, *Pseudoleskeella serpentiniense*) were burned, mostly in areas of low severity and an old road that had been previously fenced off from the public was opened by bulldozers for fire line. One of the two known populations of *Cypripedium fasciculatum* was also burned in an area of moderate burn severity.

## **b. Environmental Consequences**

### **1. Alternative 1: No Action**

The effects of the No Action alternative on S&M habitat would be both beneficial and adverse. Canopy closures and the limited moist microsites found within the treatment area would be maintained, which would be beneficial for such species as *Dendriscoaulon intricatum* and *Ramalina thrausta*. Mycorrhizal connections could also be maintained. This would be beneficial for *Cypripedium fasciculatum*, which can take up to 15 years to emerge above ground and requires specific mycorrhiza for germination and establishment. This species can emerge sporadically, remaining dormant some years.

The adverse effects of the No Action alternative on special status or S&M species would be the increasing potential for high severity wildfire. The risk of high intensity fire increases and would threaten any dormant *Cypripedium* populations which have been shown not to survive such fires (Mgmt. Recommendations 1998).

No Action would include a continuation of the grazing permit as it currently stands if the permittee grazes again. In 1995, this meant that 50 AUMs (animal unit months) were permitted. Over the years since 1988, AUMs ranged from 20 to 78 AUMs. Dates of grazing ranged from April 1 through May 31 in East and West pastures, May 1 through June 15 in the Creek pasture and finally October 16 through December 15 in the Eight Dollar mountain pasture. Heavy trampling of special status plant population areas could occur and re-introduction of noxious weed species back into the serpentine habitat could take place. Continued use could lead to a reduction in population size and habitat quality for the special status species in both dry and wet serpentine habitat.

#### b. Alternatives 2 and 3 - Effects Common to both Alternatives

##### 1) ESA Listed Plants

The project area lies within the range of two federally listed plants: *Fritillaria gentneri* and *Lomatium cookii*. No populations of either species were located in the project area, however. Therefore, there is no effect to these species from the proposed actions.

##### 2) Noxious Weeds

Spread and control of noxious weeds after any of the ground disturbing activities proposed would vary depending upon the habitat. For this project area, annual grasses such as medusa head or perennials such as star thistle could become a problem in the grazing allotment where Biscuit suppression activities took place or if grazing commences. Scotch broom could be a problem in more forested habitats.

**Proposed Mitigating Measure #3:** Use native grass seed along the Biscuit fireline and track any occurrences of noxious weeds annually. Control and re-seed with native grasses if necessary. Annually control any scotch broom infestations within the project area.

##### 3) Riparian Reserve Treatments

Riparian reserves can be primary habitat for S&M vascular and non-vascular species due to its moister microsites. The substrate for lichens and bryophytes can be trees (especially hardwoods) and shrubs within riparian areas. Over the dry forested and serpentine landscape of the Illinois Valley, riparian areas harbor the highest diversity of non-vascular species. Riparian ecosystems are rare in the United States. Only 6% of the land is considered riparian in the continental US and 70% of that has been converted to other uses such as agriculture, development and reservoirs (Hunter 1990).

Project design features will ensure that individual populations of special status or S&M plants will be buffered from riparian treatments, but in general, non-vascular plant habitat could be affected in the form of reduction of substrate for existing populations and for the establishment of new populations of lichens and bryophytes. Connectivity of habitat is very important for such species. Retaining standing trees and shrubs within these reserves could maintain suitable microclimate for S&M non-vascular species as well as a higher diversity of these species in general. These trees and shrubs will also act as refugia and will provide the complex canopy structure required to protect species diversity and to act as dispersal sources for riparian-dependent species. It should be noted, though, that Peck and McCune (1997) theorize that areas of dense regeneration may be suppressing lichen growth and establishment due to decreased light and moisture penetration into the understory.

#### 4) Young Stand/Forest Development Treatments

The forest development treatment units have very little native habitat remaining due to past timber practices. The islands of habitat with larger trees and associated mature understory are small and could contain such special status or S&M plant species as *Cypripedium fasciculatum*.

The mycorrhizal connections within these units have been disrupted to the point where fungi habitat may be non-existent, but substrate for lichens and bryophytes may still occur on the larger legacy trees left standing after initial timber harvest.

Fuel loadings from proposed treatments will be heavy. The handpiling and burning of handpiles will greatly reduce the threat of severe wildfire to the special status or S&M plants found in these units. It will also help to protect legacy trees/habitat islands from being eliminated by wildfire.

**Proposed Mitigating Measure #4:** In units with intact habitat islands, focus on protecting legacy trees and the vegetation within their drip line; use handpile and burn techniques with a pull pack from the tree in place of lop and scatter.

#### 5) Hazard Fuel Reduction

##### a) Other than slashbuster

All treatments proposed should be beneficial to botanical resources and special status / S&M species because of the reduction in dense understories. Not only will this reduce hazard fuel levels and high intensity fire effects, but it will allow for a more diverse herbaceous layer in the understory.

##### b) Slashbuster

Use of a slashbuster machine may lead to damage of plant buffers through oversight / operator error or due the creation of a layer of chipped material. Either way, the special status plant population or the habitat within the buffer area could be damaged.

**Proposed mitigating measure #5 :** Prior to using a slashbuster machine, cut (chainsaws) and hand pile material to be slashed within 25' around each plant buffer perimeter.

Slashbusting could leave 6 - 12" of slash on the ground. This level of slash would make re-establishment of the herbaceous layer difficult. This may be beneficial in areas of high noxious weed potential.

The fire-related effects of slashbusting on native vegetation could be both positive and adverse. By broadcast burning slash instead of handpiling, conditions for prescribed burning would better replicate natural, low intensity burns on the landscape, as long as the slash layer is not too thick. A thick layer of slash (> 6") may, however, create high intensity fire which could damage the soil and seedbed to a point where any species in the herbaceous layer would have difficulty re-establishing. This potential would decrease over time though, as slash settles and decomposes.

For species growing directly in the shrub layer, in this case, *Bryoria tortuosa*, it will be impossible to avoid effects using a slashbuster treatment. In order to adequately reduce hazard fuels, numerous individuals may to be eliminated. If done correctly, this should be worthwhile considering that the other option is for high intensity fire that might completely eliminate populations.

#### 6) Wildlife Habitat Restoration and Enhancement

All treatments proposed should be beneficial to botanical resources as long as the prescribed fire is of low intensity. Extensive monitoring will need to be established where special status plants are located in order to determine if reduction in grass thatch and shrub coverage improves population vigor.

#### 7) Roads and Transportation Management/Special Forest Products/Recreation

As long as project design features are followed, there should be no effects to special status or Survey and Manage plant species.

#### 8) Grazing

The proposed actions will help to alleviate impacts from grazing on the special status species associated with serpentine soils. Both dry serpentine and wetland (fen) species would be less impacted due to changes in grazing season and fencing of riparian areas. Trampling would still take place in a large portion of the allotment, however. The amount of impact occurring would be highly dependent upon the numbers of cattle grazing. Due to the proliferation of special status plant sites, this trampling would continue to affect population densities in areas of heaviest use. Cattle use could also increase the potential for spread of noxious weeds such as medusa head rye through introduction of seed source and through disruption to soils where such a species could gain a competitive edge.

Of note is the fact that the allotment is essentially located on serpentine habitat which is globally rare. Serpentine soils do not occur with frequency and the Illinois Valley is one of the best examples of this kind of habitat available in the world. The endemics located within the allotment are some of the rarest species to be found in southwestern Oregon,

#### 9) Vegetation Treatments in Older stands

An indirect effect on *Cypripedium fasciculatum* could be reduction in late-successional habitat, which when located on northerly aspects or in moist microsites, could potentially have dormant populations of these species. The commercial thinning or group selection treatment proposed in Alternative 2 will disturb the ground surface in this habitat the most (more than Alternative 3), which is detrimental to any orchid populations that may be dormant presently or to the establishment of new populations from intact habitat. It will also open the canopy to a point that could be a detriment to survival of dormant orchid populations. The Management Recommendations for these species state that canopy closure should be maintained at greater than 60%. It could also disrupt potential dispersal corridors for this species as well as non-

vascular plants such as *Dendriscoaulon intricatum*. The Management Recommendations discuss the importance of maintaining ecosystem structure and function for these species, besides maintaining immediate canopy closure. They also discuss the importance of maintaining evolutionary function and all stages of life history. Therefore, the treatments proposed in Alternative 2 would be less likely to meet the Management Recommendations set forth under the Northwest Forest Plan.

The treatments proposed in Alternative 3 would meet the Management Recommendations for *Cypripedium fasciculatum* and for other non-vascular or fungi species that could be found because it meets the 60% or greater canopy closure recommended. Less focus on group selection will allow for less area of ground disturbance which in turn means less disturbance to important mycorrhizal connections.

#### c. Alternatives 2 and 3 - Cumulative Effects

For the forested environments, the reasonable foreseeable future actions that will take place in the Matrix and on county and private land will include continued timber harvest, understory treatments and clearing of forest and valley lowlands for development. BLM actions in the Illinois Valley may include the South Deer, the East Fork Illinois, Free and Easy II and the East Kerby landscape management projects. More special status or S&M plant populations would continue to need protection or management as these actions are carried out on federal lands. Also, any populations on non-federal lands will most likely remain undetected and unprotected. The long term effect is a decrease in the ability of populations to maintain or to expand from any remaining islands of undisturbed ground into surrounding altered habitat and a decrease in the chances for persistence of these species in southwestern Oregon, especially at lower elevations in the Illinois Valley.

The reasonable foreseeable future actions on serpentine habitats of the Illinois Valley are development, mining, road building and off highway vehicle use. All of these actions have led to a reduction in available habitat and will continue to do so as populations increase in this region. Mining is especially a threat. Serpentine soils provide some of the world's only nickel and chromium deposits. Mining in the vicinity of Eight Dollar mountain has already been extensive and more mining is proposed in the Rough and Ready creek drainage. The majority of serpentine BLM holdings in the Illinois Valley have mining claims associated with them. The open nature of serpentine areas lend themselves to easy access and road building. This in turn, allows for entry by OHVs which have been a problem throughout the region.

Impacts to serpentine fens have been discussed in a draft Conservation Agreement for the serpentine fen species listed above. Besides the aforementioned actions, groundwater reduction in wetland areas is another threat. Drawing down of the groundwater near developed areas could be affecting some serpentine fens by drying them out, hence reducing the survivability of the fen dependent species.

On the other hand, the habitat restoration prescribed burning planned for most of these projects will help to return serpentine areas to a more naturally functioning state which will in turn promote species viability for rare serpentine plants. The burning that occurred during the Biscuit fire was mostly of low intensity and thus beneficial to these species as well. Also, hazard fuel reduction treatments involving thinning of dense understory in these projects will help to return forests to a healthier conditions simulating a more natural fire regime. This, in turn, will reduce the risk of high intensity fire.

#### Definitions/Management recommendation Citations

\* Mycorrhiza are underground fungi that provide a close physical association between the fungus and the roots of a plant, from which both the fungus and plant appear to benefit. A mycorrhizal root takes up nutrients more efficiently than one not

associated with mycorrhiza. Mycorrhizal fungi (also known as ectomycorrhizal) are essential for host plant nutrient uptake and play important roles in nutrient cycling in many forests. Studies from the Pacific Northwest indicate that forest management activities can reduce populations of mycorrhizal fungi and forest regeneration success (Luoma, Eberhart, Amaranthus 1997).

Management recommendations have been based on the Record of Decision (ROD) Northwest Forest Plan, the Medford District Resource Management Plan, the BLM Manual 6840, Medford District botanist advisement and professional knowledge.

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## **6. Resource: Fire and Fuels**

### **a. Affected Environment**

Effective wildfire suppression activities over the past 70 to 80 years have shifted the once frequent low intensity fire regime to an infrequent high intensity fire regime. Fire exclusion has contributed to greater stand densities, stagnation and slowed growth (Spurr and Barnes 1980) and an increase in crown fire potential (Graham, Harvey and others 1999). In the absence of fire due to fire suppression efforts there has been an increase not only in dead fuel accumulations, but live understory fuels have also greatly increased. These understory fuels have connected with the overstory fuels throughout the area. With this accumulation of ladder fuels, intense surface fires can be carried into the overstory and become crown fires (Agee and Huff 2000). Dense, overstocked stands are a contributing factor to large stand replacement fire occurrence due to closed canopy and ladder fuel presence (Agee 1993, 1996).

The Douglas-fir series typically has a natural fire return interval of 12.5 to 37 years depending on the elevation and moisture/temperature group in which it is distributed (Agee and Huff 2000). The multi-aged and multi-size structure suggest that the Douglas-fir series falls into the low-to-moderate fire regimes.

The ponderosa pine series and white oak series generally have a fire return interval of about 10 years (Agee and Huff 2000). Historically these series were low-severity fire regimes, although today much higher severity fires are possible (Agee 1993).

A fuel hazard analysis completed for the Deer Creek Watershed Analysis (1997) determined the fire hazard to be moderately high (12,770 acres or 42% high and 13,039 acres or 44% moderate) on BLM lands in the watershed. Hazard is the existence of a fuel complex which constitutes a threat of wildfire ignition, unacceptable fire behavior and severity, or suppression difficulty. Table 3-2 lists the current fuel hazard ratings for all BLM lands (including ACEC), 2,899 acres, within the Anderson West project area. These are based on the existing situation at the time of field data collection during the summer of 1996

and 1997.

With human settlement and the suppression of wildfire, fuels have been allowed to accumulate and dense vegetation has grown unchecked. Fuel hazard will increase over time in the absence of disturbance or land management activities which remove or reduce fuels. Without disturbance, fuel hazard conditions become more uniform and continuous. This increases the potential for large, high severity fire occurrence. The overall rating for the Anderson West project area is moderate.

<b>Table 3-2: Hazard Rating on BLM lands in the Anderson West Project area (2,299 acres)</b>			
<b>Current Condition</b>			
	<b>HIGH HAZARD</b>	<b>MODERATE HAZARD</b>	<b>LOW HAZARD</b>
<b>BLM OWNERSHIP</b>	7 % 169 acres	53 % 1,216 acres	40 % 914 acres

Wildfire occurrence risk analysis was completed in the Deer Creek Watershed Analysis (1997). Risk is based on the ignition source, human or lightening. The analysis was completed using historical lightening activity, human use, such as, residential and rural interface areas, recreation activities and transportation routes. All lands were considered in the analysis. Table 3-3 summarizes the current risk in Deer Creek watershed. The risk in the Anderson West project directly correlates to the Deer Creek watershed and will be used as current baseline conditions.

<b>Table 3-3: Fire Risk Rating by Acres and Percent for 72,635 Acres Of Lands Within the Deer Creek Watershed</b>			
<b>CONDITION</b>	<b>HIGH RISK</b>	<b>MODERATE RISK</b>	<b>LOW RISK</b>
<b>ALL OWNERSHIP</b>	31 % 22,414 acres	49 % 35,696 acres	20 % 14,525 acres

The current level of risk is determined by the human uses and the historical lightning activity within the project area. Risk is difficult to change or influence through land management activity as it is a function of weather events (lightning) and human behavior. Reducing public access can reduce human caused fire and affect risk, but reducing access for fire suppression forces can increase fire size and effects. Human use in the future would be expected to increase but the influence in terms of affecting risk is difficult to determine. Therefore, for the purpose of this analysis, risk is considered unchanged for the 20 year analysis period.

b. Environmental Effects

Projections on future hazard are based on current vegetation conditions and vegetation development trends in the plant associations. The expected trend for the next 20 years is for increasing vegetation density and/or increasing dead and down fuel accumulation. Future management activity beyond this assessment, 20+ years, is unknown, but would affect the future fire hazard.

The following generalized impacts provide the basics in the assessment of effects of alternative fuel treatments regarding fire hazard:

- Treatments which harvest timber and/or cut vegetation without treating the slash (hand pile burning or underburning) will increase the hazard rating.
- Hand piling, burning, and mechanical mastication reduce the hazard rating to low in the short term. Maintenance burning (broadcast burning and underburning) will reduce and/or maintain a lower hazard for the long term of 10 to 20 years.

- Density reduction treatments in both the overstory and understory with under-burning or hand piling and burning will reduce the hazard rating.
- Under-story treatments completed in conjunction with prescribed burning reduces the hazard rating in both the short and long terms due to their ladder fuel reduction and stocking reduction creates a fuel profile that decreases the potential for fire reaching the tree crowns.
- There would need to be multiple staged fuel reduction treatments over the next twenty years.

Stands that are not or will not be at or near mature conditions within the 20 year time frame are still susceptible to stand replacement from wildfire events due to conditions such as thin bark, high crown ratios, presence or ability to reestablish ladder fuels, and continued stand mortality. The trend in these stands is for treated and untreated areas to increase in hazard as vegetation in the under-story increases, crown closure occurs, and dead and down fuels accumulate. For those stands that were under-burned and are at or will reach mature conditions within the 20 year time frame, it was assumed that these stands would remain in the LOW hazard rating. Stands that are currently younger and in mid-serial stage conditions, and have down fuel from brushing or PCT, will increase in hazard by the long term period and will become HIGH and MODERATE rating categories.

#### 1) Alternative 1: No Action

The No Action Alternative would continue the current trend of increasing the fuel hazard over time. This alternative does nothing to reverse the trend of increasing fuel hazard. With the absence of natural, low-intensity, frequent fire occurrence, dead and down fuels and live fuels will increase over time. The fuels buildup creates conditions that lead to high-intensity, stand replacement fire.

The current condition has 6% of the area in the project in a high hazard condition and 63% as moderate. Within the next 5 years, a shift of 10 to 15% from current moderate levels to higher hazard conditions could occur. The shift to greater hazard condition is a result of the increase in ladder fuels from high density understory, multi-canopy nature of the much of the vegetation and accumulation of dead and down woody fuel. The trend of increasing high hazard fuel conditions will continue if no hazard reduction treatments occur. Over the long term, 15 to 20 years, without fire as a natural disturbance, the sustainability of the landscape would continue to decrease and the ecosystem would become less resilient and more vulnerable to the effects of large catastrophic events such as fire.

These conditions would place private property and public safety along the urban interface at increasing risk over time.

#### 2) Alternatives 2 and 3

Table 3-4 shows the anticipate change in hazard ratings for BLM administered lands. Future management is unknown at this time, so this assessment assumes no future activities other than the current Proposed Actions listed in Tables B-1 and B-2. The projected hazard rating changes assumes that all the proposed treatments are accomplished. These should be considered the maximum hazard reduction benefit. If less treatments occur then the reduction in high fuel hazard would be less.

<b>Table 3-4: Hazard Rating by Acres and Percent for BLM Lands</b>			
<b>Comparison of Alternatives on Hazard Rating 2,299 Acres within the Anderson West Project Area</b>			
Commercial Thinning/modified Group Selection (CT/MGS)			
Condition	High Hazard	Moderate Hazard	Low Hazard
Current Condition	7 % 169 acres	53 % 1,216 acres	40 % 914 acres
Alternative 1: No Action			
5-10 Years	16 % 376 Acres	51% 1,171 acres	33 % 752 Acres
10-20 Years	41 % 949 Acres	37% 861 Acres	21 % 489 Acres
Alternatives 2 and 3			
1-3 Years	32 % 747 Acres	29 % 677 Acres	39 % 874 Acres
3-5 years	19 % 448 acres	31 % 705 acres	50 % 1,146 acres
5-10 years	30 % 179 acres	24 % 551 acres	68 % 1,569 acres
10-20 years	5 % 108 acres	17 % 402 acres	78 % 1,789 acres

Approximately 32% of the BLM lands are in a HIGH hazard condition in the short term as an immediate result of the harvest and limited harvest in the Action Alternatives 2 and 3. The increase is based on increase slash disposal due to harvest actions and the time frame needed to treat these fuels. The reduction to 19% in 3 to 5 years is the direct result of underburning or hand pile burning of the slash. Further reduction in both HIGH and MODERATE hazard is the result of continued prescribe burning. Within 20 years 78% of the hazard is in the low category. In the long term 41% of the acres are in a HIGH hazard condition with the No Action Alternative.

Alternatives 2 and 3 have beneficial effects on the fuel hazard condition. Fuel hazard is reduced in both the long and short term under each alternative compared to the No Action Alternative. At the landscape level, harvest and fuel treatment effects on hazard significantly reduce the size and intensity of future wild land fires and set back the trend of increasing hazard development over time. Approximately 53% of the acres are currently in the MODERATE hazard. Action Alternatives 2 and 3, lower the hazard in all conditions to levels well below the No Action alternative for up to 20 years. By utilizing continued maintenance burning, desired fuel models would be maintained and the hazard rating could remain low.

Alternative 2 and 3 have only minor differences in terms of effect on hazard conditions at the project level. The areas deferred from treatment would have a no fuel hazard reduction treatments and would therefore develop increasing hazard over time. This will place these stands at a higher risk for loss if a wildfire occurs. However, the fuel reduction treatments that do occur on adjacent lands may decrease the potential of a higher intensity fire. This effect can not be quantified.

The effects of hazard reduction treatment in the Alternatives 2 and 3 are beneficial in reducing hazard conditions in both the long and short term. A wildfire occurrence within the treated areas would result in less severe effects due to the reduction in ladder fuels and fuel loadings. Wild land fire will burn with less intensity, produce lower flame lengths, and reduce the potential of the fire moving into the overstory canopy. The lower intensity burning will enable suppression forces increased opportunities to contain the fire spread. They also provide less fuel to "feed" a large fire and add to its energy. This increases the

ability of fire suppression forces to protect forest resources, homes and structures, and limit the size of wildfire. Reducing the size and amount of high intensity burn area, from a wildfire, would have a short term beneficial effect in maintaining the forest and visual resources within the watershed, as well as reducing effects on stream and water quality.

In summary, the proposed harvest and non-harvest density reduction and fuel hazard reduction treatments would substantially reduce the fuel hazard within the project area. In the event of a large wildfire, there would be fewer acres that burn with a high intensity (crown fire). More areas of lower intensity under-burning (surface fire) with little overstory mortality would occur. Location of the extreme fire affected areas would be a function of steep slopes, aspect, amount of fuel present, fuel continuity, presence of ladder fuels, and weather conditions at the time of fire occurrence. A wildfire occurrence following these treatments could have less than 20% of the area in high intensity and 60% or more experiencing low intensity burning in the project area.

Hazard reduction treatments may be required to maintain desired fuel models in the future. As vegetation grows back in the project area, low intensity maintenance burning or machine treatments may be required. These future treatments would be within a 4-5 year period after the initial treatment and would result in further reductions of HIGH and MODERATE hazard levels. (Additional NEPA analysis would precede any maintenance activities.)

## **7. Resource: Harvest volumes**

### 1) Alternative 1: No action

In the “no action” alternative, there would be no harvest or stand treatments. There would be a displacement of harvesting impacts to other unknown locations.

### 2) Alternative 2 and 3

Alternative 2 would produce an estimated 2.3 MMBF of timber towards meeting that part of the NFP / RMPs’ forest product objectives. Alternative 3 would produce an estimated 1.8 MMBF.

## **8. Resource: Recreation and VRM**

### a. Affected Environment

Recreational use of the area is dispersed and includes: equestrian use, hunting, driving for pleasure, hiking, and bicycling. Recreational use of the area follows existing roads and non-maintained informal trails in the area. There is a non-maintained trail in section 3 and 4 (T38S, R8W) which receives moderate use from the locals. This trail begins in the SW1/4 of the NE 1/4 of section 3, then rises steeply after a stream crossing.

The Medford District RMP designates the entire Anderson West project area as in VRM Class III.

### b. Environmental consequences

#### 1) Alternative 1: No Action

In the no action alternative, the existing steeper trail would continue to be used, creating potential erosion

and sedimentation issues. Other current trends of dispersed recreation on public as well as private lands would continue. Class III VRM objectives would continue to be met.

## 2) Alternatives 2 and 3

In alternatives 2 and 3, the trail would be rerouted to a more level grade to reduce possible impacts of sedimentation and erosion.

The Class III VRM objectives would continue to be met. Thinning and harvest prescription designs are such that the objectives will be met.

### **9. Resource: Grazing**

#### a. Affected Environment

The Anderson West project area includes the Deer Creek grazing allotment. The base property for the Deer Creek Allotment (#10308) grazing lease was sold in the mid-1990s. Since that time no application for grazing use has been submitted and the allotment remains vacant.

#### b. Environmental Consequences

As there is no existing active grazing for the Deer Creek allotment, the proposed changes in grazing use and the proposed boundary adjustments would have no economic impact on current lease holders or the local community.

### **10. Resource: Special Forest Products**

#### a. Affected Environment

Historically, there has been a high demand for firewood in the Illinois Valley. In the last five years there has also been an increase in the demand for small diameter poles and mushrooms. Other Special Forest Products, such as burls, boughs, and medicinal plants have been harvested in small quantities.

In recent years, quantities of firewood available to the public from BLM lands has decreased dramatically. Public firewood cutting opportunities are traditionally connected to timber sales and are limited to slash left over from logging activities. With the decrease in the number of timber sales, inaccessibility to harvest units, and increased utilization of commercial thinned trees, very little slash from timber sales becomes available for public firewood areas. Demand for firewood has exceeded supply resulting in the theft of trees for firewood. Demand for poles has been met in recent years with special pole cutting areas in the Illinois Valley although some theft continues. Opportunities in the project area for firewood and pole cutting could be met by cutting poles in harvest units prior to or at the conclusion of the removal of commercial-sized timber.

#### b. Environmental Consequences

##### 1. Alternative 1: No Action

Opportunities for firewood and small poles in the project area would continue to be extremely limited or non-existent. Demand for these products would greatly exceed supply. Firewood theft would continue.

No substantive effects for other Special Forest Products have been identified.

2. Alternatives 2 and 3 (Effects would be the same for both)

The greatest potential for pole cutting and firewood areas are in units 37S-8W-25-006 and 014, 37S-8W-35-004 and 008, and 38S-8W-3-003. These units are the most accessible, with dense, pole-sized material, and will have landing piles for firewood cutting. Logging slash from other timber sale units and at landings would be available for firewood cutting when the timber sale contract is terminated. Other potential opportunities for public firewood cutting would be in units targeted for fuel hazard reduction or understory treatment. There would be a beneficial effect to the local public by creating opportunities for firewood and pole harvest. With a supply of products available to the public for permitting, it is possible that firewood theft would decrease.

## Chapter 4 Agencies and Persons Consulted

### A. Public Involvement

Project scoping for the Anderson West project was initiated in April 2000. In April 2000, a letter inviting public scoping input to the planning process was sent to 58 adjacent landowners and organizations or individuals who had previously expressed interest in learning about these types of projects. Responses have been received from 5 organizations and 9 individuals. Many of the scoping letters were received in early 2003.

### B. Summary of Public Comments / Involvement to Date

The following summarizes the points / issues raised in the public scoping letters.

- potential impact of the Anderson West project in relation to the 2002 Biscuit Fire
- the project area has higher value as a sanctuary than for commodity extraction
- noxious weed occurrence and potential for expansion
- current recreational use of mining trail in Section 3; protection of it is needed
- potential impact of project on wildlife and botanical species
- potential adverse impact of the project on domestic water sources
- BLM should insure that small local contractors are able to get jobs provided by the project.
- Forest Service designated roadless area and relation to Anderson West Project area
- BLM should retain un-logged low-elevation forest stands
- the potential for expansion of ACEC / RNAs should be pursued
- the social value of uncut, natural appearing forest lands is important
- the project area should be evaluated for road decommissioning opportunities
- BLM should avoid commercial logging in late-seral forests
- concerned about the status of grazing that is permitted in the project area
- need to recognize the serpentine areas and their unique habitats

### C. Availability of Document and Comment Procedures

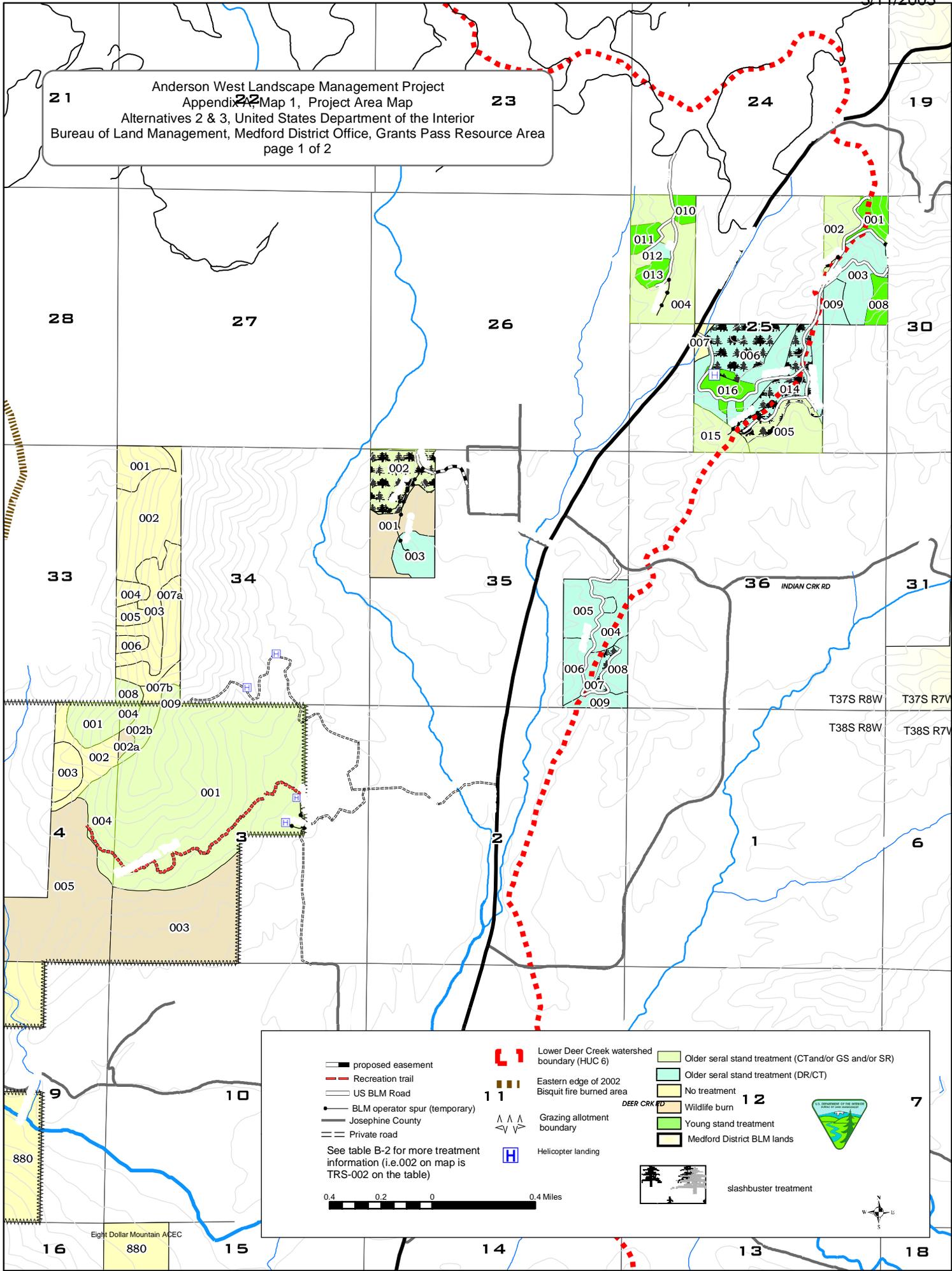
A formal 30 day public EA review and comment period will be held. The EA will be made available on the internet at the Medford District's web site ([www.or.blm.gov/Medford](http://www.or.blm.gov/Medford)). Individuals and organizations who have previously expressed an interest in the project will be informed that the EA is available. Copies of the document will be available upon request.

An announcement of the EA's availability will be placed in the legal ads in the Grants Pass *Daily Courier* newspaper. Publication of this notice will start the 30 day comment period. Written comments should be sent to Abbie Jossie, Field Manager, Grants Pass Resource Area, BLM, 3040 Biddle Road, Medford, OR 97504. Availability of the EA will also be announced in the Illinois Valley News.

**APPENDICES**

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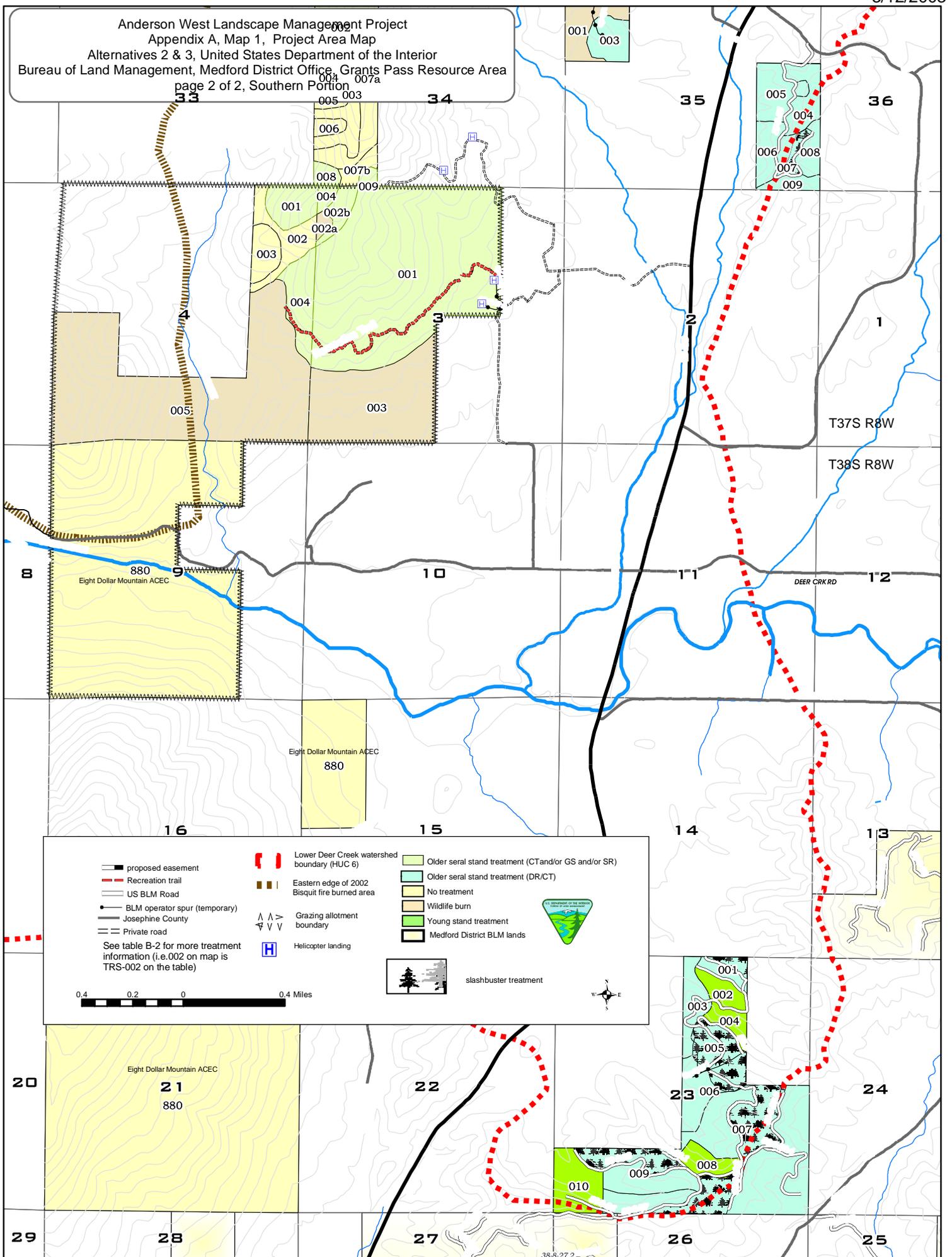
Anderson West Landscape Management Project  
Appendix A, Map 1, Project Area Map  
Alternatives 2 & 3, United States Department of the Interior  
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proposed easement	Lower Deer Creek watershed boundary (HUC 6)	Older seral stand treatment (CTand/or GS and/or SR)
Recreation trail	Eastern edge of 2002 Bisquit fire burned area	Older seral stand treatment (DR/CT)
US BLM Road	Grazing allotment boundary	No treatment
BLM operator spur (temporary)	Helicopter landing	Wildlife burn
Josephine County		Young stand treatment
Private road		Medford District BLM lands
See table B-2 for more treatment information (i.e.002 on map is TRS-002 on the table)		

Eight Dollar Mountain ACEC

Anderson West Landscape Management Project  
 Appendix A, Map 1, Project Area Map  
 Alternatives 2 & 3, United States Department of the Interior  
 Bureau of Land Management, Medford District Office, Grants Pass Resource Area  
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proposed easement	Lower Deer Creek watershed boundary (HUC 6)	Older seral stand treatment (CTand/or GS and/or SR)
Recreation trail	Eastern edge of 2002 Bisquit fire burned area	Older seral stand treatment (DR/CT)
US BLM Road	Grazing allotment boundary	No treatment
BLM operator spur (temporary)	Helicopter landing	Wildlife burn
Josephine County	slashbuster treatment	Young stand treatment
Private road		Medford District BLM lands

See table B-2 for more treatment information (i.e. 002 on map is TRS-002 on the table)

0.4 0.2 0 0.4 Miles

## Appendix B: Unit Specific Proposed Actions

**Table B-2: Summary of Treatments**

*Note: Shaded rows indicate units in which there is a difference between Alternative 2 and Alternative 3.*

T-R-SEC-OI Unit #	Total Acres in OI unit	TPCC <sup>1</sup>	Dominant Species and Seral Stage (Post-treatment seral stage is the same, except where noted) <sup>2,3</sup>	Primary Vegetation Treatment <sup>4,5,6,7</sup>	Logging System (acres) <sup>8</sup>			Slash Treatment and/or Understory Treatment <sup>9</sup>	Harvest Acres (est.) <sup>10</sup>				Pole / fuel wood potential	Harvest Volume (MBF)		Plant Acres
					Tractor	Cable	Helicopter		SR	CT	GS	DR / CT		Vol / Ac	Total <sup>11</sup>	
37S-8W-25-001	12	RTR/RMR	DF Early (planted 1997)	BR (2003)	-	-	-	HP / B	-	-	-	-	no	0	0	0
37S-8W-25-002	19	RTR/RMR	DF Mature	CT	2	10	0	UT HP/B and/or UB	-	12	-	-		4	48	0
37S-8W-25-003	31	RTR/RMR	DF Mature	CT	2	12	0	UT HP/B and/or UB	-		14	-		4	56	0
37S-8W-25-004	57	RTR/RMR	PP Mid	CT	5	35	0	UT HP/B and/or UB	-	40	-	-	yes	3	120	0
37S-8W-25-005	32	RTR/RMR	DF Mature	CT	2	16	4	SB(9a) remainder UT HP/B and/or UB	-	22	-	-		4	88	5
37S-8W-25-006	57	RTR/RMR	DF Mid	DR/CT	25	0	0	SB(35a) remainder UT HP/B and/or UB	-	-	-	25	yes	0	3	0
37S-8W-25-007	5	RTR/RMR	DF Mature	No Treatment	0	0	0	No Treatment	-	-	-	-		0	0	0
37S-8W-25-008	8	RTR/RMR	DF Early (planted 1997)	BR (2005)	-	-	-	HP / B	-	-	-	-	no	0	0	0
37S-8W-25-009	9	RTR/RMR	DF Mid	DR/CT	3	0	0	UT HP/B and/or UB	-	-	-	3	yes	0	0	0
37S-8W-25-010	6	RTR/RMR	DF Early (planted 1997)	BR (2004)	-	-	-	HP / B	-	-	-	-	no	0	0	0
37S-8W-25-011	7	RTR/RMR	DF Early (planted 1997)	BR (2006)	-	-	-	HP / B	-	-	-	-	no	0	0	0
37S-8W-25-012	3	RTR/RMR	DF Mid	DR/CT	4	0	0	UT HP/B and/or UB	-	-	-	4		0	0	0
37S-8W-25-013	7	RTR/RMR	DF Early (planted 1997)	BR (2006)	-	-	-	HP / B	-	-	-	-	no	0	0	0
37S-8W-25-014	37	RTR/RMR	DF Mid	DR/CT	20	0	0	SB(20a) remainder UT HP/B and/or UB	-	-	-	20	yes	0	2	0
37S-8W-25-015	17	RTR/RMR	DF Mid	CT/GS	3	0	10	UT HP/B and/or UB	-	-	13	-	yes	4	52	5

**Table B-2: Summary of Treatments**

*Note: Shaded rows indicate units in which there is a difference between Alternative 2 and Alternative 3.*

T-R-SEC-OI Unit #	Total Acres in OI unit	TPCC <sup>1</sup>	Dominant Species and Seral Stage (Post-treatment seral stage is the same, except where noted) <sup>2,3</sup>	Primary Vegetation Treatment <sup>4,5,6,7</sup>	Logging System (acres) <sup>8</sup>			Slash Treatment and/or Understory Treatment <sup>9</sup>	Harvest Acres (est.) <sup>10</sup>				Pole / fuel wood potential	Harvest Volume (MBF)		Plant Acres
					Tractor	Cable	Helicopter		SR	CT	GS	DR / CT		Vol / Ac	Total <sup>11</sup>	
37S-8W-25-016	14	RTR/RMR	DF Early (planted 1997)	BR (2006)	-	-	-	SB(5a) remainder HP / B	-	-	-	-	no	0	0	0
37S-8W-34-001	18	LSW	Grass and brush	No Treatment	-	-	-	No Treatment	-	-	-	-		0	0	0
37S-8W-34-002	56	RTW	Grass and brush	No Treatment	-	-	-	No Treatment	-	-	-	-		0	0	0
37S-8W-34-003	31	LSW	Grass and brush	No Treatment	-	-	-	No Treatment	-	-	-	-		0	0	0
37S-8W-34-004	7	RMR	Grass and brush and PP	No Treatment	-	-	-	No Treatment	-	-	-	-		0	0	0
37S-8W-34-005	6	RTW	Grass and brush	No Treatment	-	-	-	No Treatment	-	-	-	-		0	0	0
37S-8W-34-006	5	RTW	Grass and brush	No Treatment	-	-	-	No Treatment	-	-	-	-		0	0	0
37S-8W-34-007a	23	RTW	Grass and brush	No Treatment	-	-	-	No Treatment	-	-	-	-		0	0	0
37S-8W-34-007b	7	RTR/RMR	Grass and brush and PP	No Treatment	-	-	-	No Treatment	-	-	-	-		0	0	0
37S-8W-34-008	6	RTR/RMR	DF Mature (2 ac early after harvest)	CT / GS	0	0	6	UT HP/B and/or UB	-	4	2			6	36	2
37S-8W-34-009	3	RTR/RMR	DF Mature	CT / GS	0	0	3	UT HP/B and/or UB	-	3	-			6	18	0
37S-8W-35-001	31	LSW	Grass and brush	Wildlife Burn	-	-	-	Wildlife Burn	-	-	-	-		0	0	0
37S-8W-35-002	33	RTR/RMR	DF Mature	CT	21	10	0	SB(33a)	-	31	-	-		7	217	0
37S-8W-35-003	16	RTR/RMR	DF Mid	DR/CT	7	7	-	UT HP/B and/or UB	-	-	-	14		1	7	0
37S-8W-35-004	18	RTR/RMR	DF Mid	DR/CT	10	0	0	UT HP/B and/or UB	-	-	-	10	yes	0	1	0

**Table B-2: Summary of Treatments**

*Note: Shaded rows indicate units in which there is a difference between Alternative 2 and Alternative 3.*

T-R-SEC-OI Unit #	Total Acres in OI unit	TPCC <sup>1</sup>	Dominant Species and Seral Stage (Post-treatment seral stage is the same, except where noted) <sup>2,3</sup>	Primary Vegetation Treatment <sup>4,5,6,7</sup>	Logging System (acres) <sup>8</sup>			Slash Treatment and/or Understory Treatment <sup>9</sup>	Harvest Acres (est.) <sup>10</sup>				Pole / fuel wood potential	Harvest Volume (MBF)		Plant Acres
					Tractor	Cable	Helicopter		SR	CT	GS	DR / CT		Vol / Ac	Total <sup>11</sup>	
37S-8W-35-005	21	RTR/RMR	DF Mid	DR/CT	6	0	0	UT HP/B and/or UB	-	-	-	6	yes	1	6	0
37S-8W-35-006	14	RTR/RMR	DF Mid	DR/CT	0	6	0	UT HP/B and/or UB	-	-	-	6	yes	1	3	0
37S-8W-35-007	9	RTR/RMR	DF Mid	DR/CT	6	0	0	SB(4a) remainder UT HP/B and/or UB	-	-	-	6	yes	1	3	0
37S-8W-35-008	10	RTR/RMR	DF Mid	DR/CT	1	1	0	UT HP/B and/or UB	-	-	-	2		0	0	0
37S-8W-35-009	10	RTR/RMR	DF Mature	DR/CT	2	6	0	UT HP/B and/or UB	-	-	-	8	yes	1	8	0
38S-8W-03-001	278	RTR/RMR	DF Mature (20 ac of early after treatment)	CT / GS / SR	30	10	168	UT HP/B and/or UB	20	180	8	-		6	1248	20
38S-8W-03-002a	3	RTW	Grass and brush	Wildlife Burn	-	-	-	WB	-	-	-	-		0	0	0
38S-8W-03-002b	10	RMR	DF Mature	CT	0	0	10	UT HP/B and/or UB	-	10	-	-		0	0	0
38S-8W-03-003	101	LSW	Grass and brush	Wildlife Burn	-	-	-	WB	-	-	-	-		0	0	0
38S-8W-03-004	4	RTR/RMR	DF Mature	CT	0	0	4	UT HP/B and/or UB	-	4	-	-		6	24	0
38S-8W-04-001	19	RTR/RMR	DF Mature	CT	0	0	19	UT HP/B and/or UB	-	19	-	-		5	95	0
38S-8W-04-002	22	RTW	Grass and brush	No treatment	-	-	-	No Treatment	-	-	-	-		0	0	0
38S-8W-04-003	14	LSW	Grass and brush	No treatment	-	-	-	No Treatment	-	-	-	-		0	0	0
38S-8W-04-004	25	RTR/RMR	PP Mature (10 ac of early after treatment)	CT/ SR	0	0	21	UT HP/B and/or UB	6	15	-	-		4	84	10
38S-8W-04-005	248	LSW	Grass and brush	Wildlife	-	-	-	WB east of Squaw Crk (129 acres)	-	-	-	-		0	0	0

**Table B-2: Summary of Treatments**

*Note: Shaded rows indicate units in which there is a difference between Alternative 2 and Alternative 3.*

T-R-SEC-OI Unit #	Total Acres in OI unit	TPCC <sup>1</sup>	Dominant Species and Seral Stage (Post-treatment seral stage is the same, except where noted) <sup>2,3</sup>	Primary Vegetation Treatment <sup>4,5,6,7</sup>	Logging System (acres) <sup>8</sup>			Slash Treatment and/or Understory Treatment <sup>9</sup>	Harvest Acres (est.) <sup>10</sup>				Pole / fuel wood potential	Harvest Volume (MBF)		Plant Acres
					Tractor	Cable	Helicopter		SR	CT	GS	DR / CT		Vol / Ac	Total <sup>11</sup>	
38S-8W-09-880	446	LSW/FNNW	ACEC	No Treatment	-	-	-	No Treatment	-	-	-	-		0	0	0
38S-8W-15-880	82	LSW/FNNW	ACEC	No Treatment	-	-	-	No Treatment	-	-	-	-		0	0	0
38S-8W-21-880	639	LSW/FNNW	ACEC	No Treatment	-	-	-	No Treatment	-	-	-	-		0	0	0
38S-8W-23-001	11	RTR/RMR	DF Mid	DR/CT	1	0	0	SB(4a) remainder UT HP/B and/or UB	-	-	-	1	yes	1	1	0
38S-8W-23-002	11	RTR/RMR	DF Early (planted 1980)	PCT / PR <sup>9</sup> (2005)	-	-	-	HP / B	-	-	-	-	no	0	0	0
38S-8W-23-003	17	RTR/RMR	DF Mid	DR/CT	4	13	0	UT HP/B and/or UB	-	-	-	17	yes	1	17	0
38S-8W-23-004	10	RTR/RMR	DF Early (planted 1991)	PCT (2005)	-	-	-	HP / B	-	-	-	-	no	0	0	0
38S-8W-23-005	17	RTR/RMR	DF Mid	DR/CT	7	7	0	SB(17a)	-	-	-	14	yes	1	14	0
38S-8W-23-006	28	RTR/RMR	DF Mid	DR/CT	8	7	0	SB(10a) remainder UT HP/B and/or UB	-	-	-	15	yes	1	15	0
38S-8W-23-007	151	RTR/RMR	DF Mid	DR/CT	48	48	0	SB(45a) remainder UT HP/B and/or UB	-	-	-	96	yes	1	96	0
38S-8W-23-008	13	RTR/RMR	DF Early (planted 1980)	PCT / PR <sup>9</sup> (2003)	-	-	-	HP / B	-	-	-	-	no	0	0	0
38S-8W-23-009	40	RTR/RMR	DF Mid	DR/CT	10	20	0	SB(18a) remainder UT HP/B and/or UB	-	-	-	30	yes	2	45	0
38S-8W-23-010	27	RTR/RMR	DF Early (planted 1991)	BR (2005)	-	-	-	HP / B	-	-	-	-	no	0	0	0
<b>Totals</b>	<b>2861</b>				<b>227</b>	<b>208</b>	<b>245</b>		<b>26</b>	<b>340</b>	<b>37</b>	<b>277</b>			<b>2307</b>	<b>42</b>

**Table B-2: Summary of Treatments**

*Note: Shaded rows indicate units in which there is a difference between Alternative 2 and Alternative 3.*

T-R-SEC-OI Unit #	Total Acres in OI unit	TPCC <sup>1</sup>	Dominant Species and Seral Stage (Post-treatment seral stage is the same, except where noted) <sup>2,3</sup>	Primary Vegetation Treatment <sup>4,5,6,7</sup>	Logging System (acres) <sup>8</sup>			Slash Treatment and/or Understory Treatment <sup>9</sup>	Harvest Acres (est.) <sup>10</sup>				Pole / fuel wood potential	Harvest Volume (MBF)		Plant Acres
					Tractor	Cable	Helicopter		SR	CT	GS	DR / CT		Vol / Ac	Total <sup>11</sup>	

1) TPCC (Timber Productivity Capability Classification): RTR - regeneration restricted due to hot temperatures and low soil moisture; RMR- regeneration restricted due to low soil moisture.

FNNW, LSW, RTW -withdrawn due to hot temperatures and /or poor soils

2) Stand Seral Stage: (Typical of many units in the forests of southwest Oregon, a unit may be fairly heterogeneous with regards to vegetation type, structure, ages and ecological processes.

The seral stage indicated here is a generalize description of the unit.)

Early - Vegetation is dominated by shrubs or conifers and hardwood trees in a seedling/ sapling size class (<5"DBH)

Mid - Vegetation is tree dominated. Trees at least small pole size (>4"DBH). Larger scattered trees may be present.

Mature - Forest has begun to differentiate into distinct canopy layers. Overstory dominant and codominant trees are conifers greater than 20" DBH, understory trees will be conifer-hardwood mix.

Old Growth - Stand is multilayered and has at least two distinct canopy layers. Large conifer trees greater than 35" DBH number 8+/ac.

3) Dominant Species: DF = Douglas-fir, PP=Ponderosa pine

4) Plantation treatments have the projected treatment year in parenthesis

5) Treatments: CT - Commercial Thin MGS- Modified Group Selection SR-Structural Retention BR-Brushing DR/CT-Density reduction with some commercial thin PCT-Precommercial thinning PR - Pruning

6) Some variation of prescriptions and treatments may occur within a unit in response to, and to capitalize on, stand and site variations within the unit.

7) Pruning (PR) would not be done in the riparian reserve

8) Logging systems may vary if operator has obtained permission to use private property for access.

9) Slash / Understory Treatments: UT-Understory Thinning HP/B-Hand Pile and Burn WB-wildlife habitat improvement burn UB-Underburn SB(.a)- slashbuster w/ estimated acres.

Slashbuster treatment acres would not exceed estimates given

10) Harvest acres vs. Unit acres: The difference in these acreages is attributable to large variability within the unit, unit inclusions of riparian reserves, non-forest, etc.

11) Alternate 3 would reduce the total sale volume by up to 30% or 500 MBF

**Appendix C: Road Information - Proposed Road Use, Maintenance, Construction, Improve, Renovate, Decommission and Closures of Project Roads**

Table C-1: Proposed Road Use, Maintenance, Construction, Improve, Renovate, Decommission and Closures of Project Roads								
Road Number / Road Segment	Total Length (miles)	Road Control	Road Width / Surface type	Miles of Proposed Treatment:				Comments
				Main-tenance	Construc-tion	Improve/ Renovate	Decom-mission	
37-8-24 A	0.26	BLM	14' / ASC	0.26	--	--	--	Install BLM gate.
37-8-24 B	0.31	BLM	12' / NAT	0.31	--	0.31	--	Install water dips.
37-8-25	1.39	BLM	14' / GRR	1.39	--	--	--	Existing BLM gate.
37-8-25.1	0.44	BLM	17' / NAT	0.44	--	--	--	
37-8-25.2	0.08	BLM	30' / NAT	0.08	--	--	--	
37-8-25.3	0.39	BLM	14' / NAT	0.39	--	--	--	
37-8-35	0.96	BLM	16' / NAT	0.96	--	--	--	
37-8-35.1 A	0.17	PVT	12' / NAT	0.17	--	0.17	--	Acquire easement.
37-8-35.1 B	0.16	BLM	12' / NAT	0.16	--	0.16	--	
38-8-27	3.52	BLM	16' / PRR	3.52	--	--	--	Replace damaged BLM gate.
38-8-23	0.67	BLM	18' / GRR	0.67	--	--	--	
38-8-23.1	0.11	BLM	14' / NAT	--	--	--	0.11	Decommission following use.
38-8-23.2	0.20	BLM	14' / NAT	0.20	--	0.20	--	
38-8-23.3	0.46	BLM	17' / NAT	0.46	--	0.46	--	
38-8-23.4	0.48	BLM	17' / NAT	--	--	--	0.48	Decommission following use.
38-8-23.5	0.30	BLM	16' / GRR	0.30	--	--	--	
USFS 025 (T37S, R8W, Secs 24 & 25)	0.89	USFS	20' / BST	0.89	--	--	--	
Circle W / Corral Dr. (T37S, R8W, Sec 35)	0.48	County	17' / ASC	0.48	--	--	--	
Clear Creek Road (T38S, R8W, Sec 2)	0.25	County	12' / ASC	0.25	--	--	--	County bridge at milepost 0.09.
Pine Tree Way (T38S, R8W, Sec 2)	0.11	County	12' / ASC	0.11	--	--	--	
private access spur (T38S, R8W, Sec 2)	0.24	PVT	14' / PRR	0.24	--	--	--	Rough&Ready easement road. BLM access granted by Rough & Ready, private gate.
Private spur (T38S, R7W, Sec 34, T38S, R8W, Sec 3)	1.67	PVT	12' / NAT	1.67	--	1.67	--	Rough & Ready road. BLM access granted by Rough & Ready, construct/improve helicopter landings.
Private spur (T38S, R7W, Sec 26)	2.11	PVT	14' / NAT	2.11	--	2.11	--	Easement required.
Operator Spur A (T38S, R8W, Sec 3, SW¼NE¼)	0.20	BLM	14' / NAT	--	0.20	--	0.20	Construct operator spur, decommission following use.
Operator Spur B (T38S, R8W, Sec 3, SW¼NE¼)	0.20	BLM	14' / NAT	--	0.20	--	0.20	Construct operator spur, decommission following use.

**Table C-1: Proposed Road Use, Maintenance, Construction, Improve, Renovate, Decommission and Closures of Project Roads**

Road Number / Road Segment	Total Length (miles)	Road Control	Road Width / Surface type	Miles of Proposed Treatment:				Comments
				Maintenance	Construction	Improve/Renovate	Decommission	
Operator Spur C (T37S, R8W, Sec 35, NW¼ NW¼)	0.21	BLM	14' / NAT	-	0.20	-	0.20	Construct operator spur, obliterate following use.
Operator Spur D (T37S, R8W, Sec 35, SW1/4 NW1/4)	0.35	BLM	14' / NAT	-	0.35	-	0.35	Construct operator spur, obliterate following use.
Operator Spur E (T37S, R8W, Sec 25, SW1/4 NW1/4)	0.14	BLM	14' / NAT	-	0.14	-	0.14	Construct operator spur, decommission following use. Provides access to OI 004.
Operator Spur F (T37S, R8W, Sec 25, SE 1/4 SW1/4)	0.24	BLM	14' / NAT	0.19	0.05	-	0.24	Open existing spur road and construct 250' operator spur, decommission following use. Provides access to OI 015.
Operator Spur G (T37S, R8W, Sec 25, NE 1/4 NE1/4)	0.07	BLM	14' / NAT	-	0.07	-	0.07	Construct operator spur, decommission following use. Provides access to OI 002.
Operator Spur H (T37S, R8W, Sec 25, NE 1/4 NE1/4)	0.07	BLM	14' / NAT	-	0.07	-	0.07	Construct operator spur, decommission following use. Provides access to OI 003.
Operator Spur I (T37S, R8W, Sec 23, SW 1/4 NE1/4)	0.03	BLM	14' / NAT	-	0.03	-	0.03	Construct operator spur, decommission following use. Provides access to OI 005.
<b>MILEAGE TOTALS</b>	<b>17.16</b>			<b>15.25</b>	<b>1.17</b>	<b>5.08</b>	<b>2.09</b>	

**DEFINITIONS:**

Road Surface Type: BST = bituminous surface treatment  
 ASC = aggregate surface course  
 PRR = pit run rock  
 GRR = grid rolled rock  
 NAT = natural surface

Road Control: BLM = Bureau of Land Management  
 USFS = US Forest Service  
 County = Josephine County, OR  
 PVT = Private

*Renovation* may include roadside brushing, surface blading, surface rocking, reshaping or out sloping of the road subgrade, and installing drainage dips or other drainage structures where needed.

*Maintenance* may include surface blading, roadside brushing for safety, spot rocking and maintaining existing drainage structures.

*Decommissioning* consists of subsoil ripping of the roadbed to promote the establishment of vegetation and promote drainage consistent with the surrounding undisturbed areas. Existing culverts will be removed. Grass seeding of the road prism, fill slope and cutbank, and mulching of the road prism will be included to minimize initial erosion potential. An earth berm barricade will be constructed at the beginning of each road to prevent use of the road prism following decommissioning.

## **Appendix D: Issues Considered but Eliminated From Detailed Analysis**

1. There is a dam on Squaw creek (BLM land) which impedes fish passage. It's removal was considered but eliminated from the current project. This is due to the need to extensively address domestic water uses as a part of any dam modification proposals. It would be addressed in the future with separate analysis.
2. The proposal initially considered include using prescribed fire to improve wildlife habitat conditions in Section 4 and 9. This area was underburned during the Biscuit Fire suppression and has thus been dropped from the current project proposal.
3. The transportation option of using Road 37-8-35.1 (Segments A, B) and then acquiring an easement through Section 26 for segment C was considered. Construction of an operator spur would also have began on private property in Section 26 and proceeded for approximately 200 feet before entering BLM land. Easements would have been required to use Segments A and C and the operator spur. BLM representatives met with the landowner's to discuss access needs. The landowner in Section 26 was unwilling to provide long term access over road Segment C. The landowner stated he would not sign an easement, therefore this alternative and other road alternative involving the private road through Section 26 were eliminated from detailed analysis.

## **Appendix E: Potential Monitoring**

### 1. Special status plant monitoring -

Monitor the “buffer” protection measures on special status plant populations. Establish a baseline based on the current population levels. Monitor the effect of grazing, fuel hazard reduction treatments and prescribed fire on sensitive plant species populations. Monitor for ten years after treatment