

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
MEDFORD DISTRICT
BUTTE FALLS RESOURCE AREA

ENVIRONMENTAL ASSESSMENT
for
FLOUNCE AROUND

Flounce Around OR-115 -03 - 01

Project Location: T. 33 S., R. 1 E. Sections 1, 11, 12, 13, 14, 15, 22, 23, 27, & 35
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This Environmental Assessment for Flounce Around was prepared utilizing a systematic interdisciplinary approach integrating the natural and social sciences and the environmental design arts with planning and decision making.

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Date:

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BUTTE FALLS RESOURCE AREA
FLOUNCE AROUND PROJECT

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INTRODUCTION

The Butte Falls Resource Area (BFRA) proposes to implement forest management activities and restoration projects in the Lost Creek and Lower Big Butte Watersheds. The proposed projects include timber harvest, hazardous fuels reduction, and road projects (ie road surfacing, decommissioning etc.). The total analysis area is 21,380 acres in size. BLM manages 7,952 acres (37%) of the analysis area; private industry manages 8,070 acres (38%); Corps of Engineers 2,965 (14%), with the remaining 2,393 acres (11%) being a mix of State and private non-industrial lands and National Forest. Timber harvesting would occur within matrix lands and the fuel hazard reduction and road projects, would occur within Administratively Withdrawn, Matrix and Riparian Reserves as designated in the Record of Decision for the Northwest Forest Plan Environmental Impact Statement (SEIS/ROD) p 7. All projects are located on public lands administered by the BLM. (See map 1 for project location.)

I. PURPOSE OF AND NEED FOR ACTION

The purpose of this Environmental Assessment (EA) is to analyze the effects of harvesting timber, reducing existing high stand densities and hazardous fuels within forested stands, and improving water quality through road related projects (e.g., road upgrades, road closures) from this analysis area. The proposed actions would meet the goals and objectives of the Medford District Resource Management Plan (RMP) by contributing to the District's decadal Probable Sale Quantity while providing a healthy forest ecosystem with habitat that supports populations of native species and includes protection for riparian areas and water bodies. In addition, the proposed action is designed to meet objectives addressed in the Lost Creek and Lower Big Butte Watershed Analyses such as timber stand improvement, forest health, fire hazard reduction and maintenance and restoration of water quality. These recommendations have been incorporated into project proposals presented in this EA.

Forest Condition

In the proposed project area, many forest stands are overstocked with more trees than the site has water, nutrients and growing space to sustain. With treatment, the number of trees per acre would be reduced towards levels that would provide for a productive, diverse, and resilient forest. In forest stands that are overstocked the largest trees typically experience increased stress during drought periods due to competition with smaller trees for limited amounts of water and nutrients. This environmental stress can reduce tree vigor and increase the potential for tree mortality. Where stand conditions allow, management actions would be targeted at developing and maintaining large healthy trees to insure that structural diversity and the biological benefits for dependent species are maintained. Forest stands that have declining growth rates or are deteriorating due to disease or other factors would have treatments prescribed to insure the reestablishment of conifer and hardwood species and the retention of structural and habitat niches.

Hazardous Fuels Reduction and Restoration of Low Elevation Plant Communities

The objectives of the proposed projects are to treat natural or previously managed stands that are currently in an overstocked condition, which occur naturally or are due to the exclusion of fire. Forest stands will also be treated for fuels reduction from harvest activities. The project goals are to utilize fire or simulate fire effects in the ecosystem as a disturbance agent to thin the understory, eliminating ladder fuels and reducing crown fire potential. These combined actions, would reduce the risk and consequences of unwanted wildfire in the Wildland Urban Interface (WUI). WUI areas within the project are identified as high risk communities and high use recreation areas. Treatments would increase wildland fire fighter and public safety if a wildfire does occur in these areas. Treatments with multiple entries would be designed to reduce existing fuel loadings over time to levels that would approximate natural levels that occurred prior to pre-settlement and fire exclusion, these natural levels are considered a Condition Class 1. Currently, 15% of the project area is classified as Condition Class 1, 30% is Condition Class 2, and the remaining 55% is Condition Class 3, refer to Appendix G for Condition Class definitions.

In order to accomplish the objectives of hazardous fuels reduction and restore the area to natural levels found in a Condition Class 1, initial treatments such as understory thinning, mechanical treatments

(slashbuster), hand piling and hand pile burning of the existing hazardous fuels will allow for the utilization and reintroduction of fire through controlled prescribed burns. Hazardous fuels reduction treatments will focus on areas that are in need of:

- Reduction of hazardous fuels in the Wildland Urban Interface that have been identified as Communities at Risk and those areas of high recreation use.
- Reduction in understory densities and ladder fuels to decrease fuel continuity which decreases the fire spread potential between lowland and upland areas, leading to stand destroying fires and creating areas where wildland fire fighters can safely monitor and fight wildland fires.
- Treatment of slash resulting from harvest activities.

Road Related Sediment

The Lost Creek watershed analysis has identified the predominant non-point source (NPS) of sediment in creeks within this project area as coming from roads, landings, and skid roads. This NPS of sediment reduces water quality and subsequently degrades aquatic habitat in the local streams affected by these roads. To reduce this road related sedimentation and improve water quality, this project proposes to implement design features that will improve road drainage, stabilize road prisms, and protect road surfaces. Among the specific projects proposed are road improvements, road renovation, road decommissioning, road closures, and skid road ripping and waterbarring.

Summary

The combination of these treatments would begin to develop a landscape that has the ability to buffer and absorb disturbances, such as fire, insects, disease, drought, floods and potential climate change, rather than to magnify those disturbances. Throughout the project area, healthy plant communities with a diversity of trees sizes and species would provide habitat and connectivity for native plant and animal species.

Four action alternatives were developed for this project. A description of these alternatives can be found in Chapter II of this document.

Project Objectives

Improve forest ecosystem health, diversity, and resiliency. (Lost Creek Watershed Analysis, pgs 75-77)

Produce a sustainable supply of timber and other forest commodities that provide jobs and contribute to community stability. (Medford Record of Decision and Resource Management Plan (RMP) pg. 38)

Provide connectivity (along with other allocations such as riparian reserves) between late-successional reserves. (RMP pg. 38)

Provide habitat for a variety of organisms associated with both late-successional and younger forests. (RMP pg. 38)

Provide for important ecological functions such as dispersal of organisms, carryover of some species from one stand to the next, and maintenance of ecologically valuable structural components such as down logs, snags and large trees.

Reduce the risk of road generated sediment (Lost Creek Watershed analysis, pg 85).

Decrease ground fuels, ladder fuels and canopy closures to reduce risk of running crown fires and increased fire growth potential. (Lost Creek Watershed Analysis pg 4-5, 4-6)

Control existing infestations and discourage the spread of non-native and noxious weeds throughout the watershed. (Lost Creek Watershed Analysis pg 4-6)

In those portions of the watershed that fall into the Increased Resource Area (IRA) zone, opportunities for fuel treatments, such as modified fuels profile zones exist. Underburning in brushfields and white oak stands will modify fuel profiles. The object of these treatments would be to reduce large fire size. (Lost Creek Watershed Analysis, pg 79).

Upgrade selected stream crossings to meet 100-year flood standards. (Lost Creek Watershed Analysis pg 4-8)

Consider decommissioning roads to improve hydrologic and riparian function. (Lost Creek Watershed Analysis pg 4-9)

Manage the transportation system to minimize sediment delivery to streams. (Lost Creek Watershed Analysis pg 4-12, 13)

Maintain and protect BLM Sensitive, Survey and Manage, and Threatened and Endangered Species. (RMP pg 50-51, S&M ROD)

A. Conformance With Existing Land Use Plans

The proposed timber harvest and restoration projects are in conformance with the BLM land use plans for the subject areas. The proposed projects are consistent with management objectives for public lands identified in the Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl (SEIS), approved April 13, 1994, the Record of Decision and Resource Management Plan for the Medford District (RMP), approved June 1995, and the Record of Decision and Standard and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standard and Guidelines, (S&M ROD), approved January 2001.

Approximately 3,128 acres are proposed for management activities. All of the acreage has been identified as Matrix, Riparian Reserve, or Administratively Withdrawn lands.

The timber harvest areas (503 acres) are on lands designated as Matrix. As defined in the SEIS (page C-39) and the RMP (pages 38 – 40), Matrix lands consist of those federal lands outside of the six categories of designated reserve areas in which most timber harvest would be conducted according to standards and guidelines.

The fuel hazard reduction treatments would occur on a combination of lands designated as Matrix (200 acres), Riparian Reserve (529 acres) or Administratively Withdrawn (1896 Acres). Riparian Reserve lands as defined in the SEIS (pg C-30) and the RMP (pg 26 – 32) are those lands used to maintain and restore riparian structures and functions of intermittent streams, confer benefits to riparian dependent and associated species other than fish, enhance habitat conservation for organisms that are dependent on the transition zone between upslope and riparian areas, improve travel and corridors for many terrestrial animals and plants, and provide for greater connectivity of the watershed. The riparian reserves will also serve as connectivity corridors among late-successional reserves. Administratively Withdrawn lands as defined in the SEIS (pg C-29) and the RMP (pg 38 & 72) are those lands withdrawn from scheduled timber harvest and include such areas as timber production capability classification withdrawals (woodlands, non-forested lands), recreation sites and rights-of-way corridors.

B. Relationship to Statutes, Regulations, and Other Plans

The proposed action and alternatives are in conformance with the direction given for the management of public lands in the Medford District by the Oregon and California Lands Act of 1937 (O&C Act) and the Federal Land Policy and Management Act of 1976 (FLPMA). The BLM is directed to manage the lands covered under the O&C Act for permanent forest production under the principles of sustained yield. BLM is also required to comply with other environmental and conservation laws, such as the Endangered Species Act of 1973 and the Water Pollution Prevention and Control Act, while implementing the mandates given by FLPMA and the O&C Act. The proposed action and alternatives are in conformance with these laws.

This environmental assessment (EA) is being prepared to determine if the proposed action and any of the alternatives would have a significant effect on the human environment, thus requiring the preparation of an Environmental Impact Statement (EIS) as prescribed in the National Environmental Policy Act of 1969. It is also being used to inform interested parties of the anticipated impacts and provide them with an opportunity to comment on the various alternatives. Further, the EA is being used to arrive at a final project design to meet a variety of resource issues.

The EA is being used to provide the decision maker, the Butte Falls Resource Area Field Manager the most current information relating to these projects upon which to base a decision.

C. Decisions to be Made Based on the Analysis

The Butte Falls Resource Area Field Manager must decide if the impacts of implementing the proposed action or the alternatives would result in significant effects to the human environment, thus requiring that an EIS be prepared before proceeding with the proposed action as prescribed in the National Environmental Policy Act of 1969.

The field manager must decide if the BLM would harvest trees, treat hazardous fuels and close roads.

If the decision maker should decide to select one of the action alternatives, the analysis in this EA would be used to help determine where harvesting and other landscape treatments could occur.

D. Summary of Scoping Activities

Scoping letters were sent to adjacent landowners and interested publics. The letter requested comments concerning issues that would be addressed in the EA. Seven responses were received, for further clarification see file in the Butte Falls Resource Area, Medford District BLM. Following is a list of issues/concerns that were received:

- ★ Harvesting large trees
- ★ Hiking trails
- ★ Bald eagles
- ★ General Environmental Assessment Format
- ★ Road construction, decommissioning, and road repair
- ★ Fuels reduction; acreage, location and soil type
- ★ Maps
- ★ Coarse woody material
- ★ Noxious weeds
- ★ Aquatic conservation
- ★ Fire Hazard
- ★ Cumulative effects

E. Issues Identified Through The Scoping Process To Be Analyzed In This EA

The issues identified through the initial scoping effort and through the interdisciplinary team process are listed below. Indicators or measurements that are suggested, are used to compare how the alternatives address the issues. Chapter II contains a comparison summary of the alternatives and their response to the issues.

Issue 1: Forest Condition - Dense and Declining Forest Stands

The forest stands proposed for density management and selective harvest have more trees than the site can sustain. Removal of competing and poor vigor trees would reduce competition and provide for additional site resources (water, nutrients, sunlight and growing space) for the remaining trees. Forest stands with high tree densities result in declining tree vigor and growth, tree mortality and an increased susceptibility to insect attack, root disease infection and stand replacing wildfires. The forest stands proposed for regeneration harvest have growth rates that have declined and/or are deteriorating with the integrity of the stand threatened.

Indicators for measuring this issue are:

- Acres receiving silvicultural treatment
- Change in the number/density of trees per acre
- Change in growth of timber stands after treatment

Issue 2: Fuels Hazard Reduction

There currently exists high fuels buildup within the Flounce Around Project area. Approximately 1550 acres of the project area is located in the Wildland Urban Interface (WUI). The WUI consist of those areas near and around the communities of Elk Creek and Crowfoot Road that meet the criteria for Communities at Risk as identified in the Federal Register. The area north of Lost Creek Reservoir has been identified as WUI by the Oregon Department of Forestry, due to the abundance of homes and the high recreation use in this area.

These areas are identified as “at risk” and are at an increased risk from uncharacteristically large scale and high intensity wildfires for this area and vegetation type. In most cases these risks are created by years of fire suppression and naturally increasing fuel loading (thick understory vegetation). These fires can threaten communities and damage key resources including timber, fish and wildlife habitat, soils, air quality, and drinking water quality.

All treatments that occur under this project would be designed to mitigate damage from unwanted wildland fire.

Indicators for measuring this issue are:

- Acres treated
- Acres treated within the Wildland Urban Interface
- Change in Fuel Model
- Change in Condition Class
- Reduction in flame lengths
- Reduction in Fire Intensities (Rate of Spread)

Issue 3: Road Related Sediment

The Lost Creek watershed analysis has identified the predominant non-point source (NPS) of sediment in creeks within this project area as coming from roads, landings, and skid roads. This NPS of sediment reduces water quality and subsequently degrades aquatic habitat in the local streams affected by these roads. To reduce this road related sedimentation and improve water quality, this project proposes to implement design features that will improve road drainage, stabilize road prisms, and protect road surfaces. Among the specific projects proposed are road improvements, road renovation, road decommissioning, road closures, and skid road ripping and waterbarring.

Sedimentation from roads

Indicators for measuring this issue are:

- Miles of roads improved
- Miles of roads partially decommissioned
- Miles of roads fully decommissioned

CHAPTER II ALTERNATIVES

A. Introduction

This chapter describes the proposed four action alternatives. In addition, a “No Action” alternative is presented to form a base line for analysis. This chapter also outlines project mitigation which is designed into the alternatives. The mitigation or Project Design Features (PDFs) are included for the purpose of reducing or eliminating anticipated environmental impacts. Analysis supporting the inclusion of PDFs can be found in the appendices of this EA and Appendix D and E of the RMP.

The Butte Falls Resource Area has developed these action alternatives to achieve the project objectives identified in the Lost Creek and Lower Big Butte Watershed Analysis (refer to pages 4-1 to 4-25). After receiving comments from the public through the scoping process, the alternatives were developed by a team of resource specialists. The Lost and Lower Butte Creek Watershed Analysis provided information that was used in the development of these alternatives.

This chapter summarizes the consequences of the alternatives. The selected alternatives are described by the issue and how the alternative would affect the key issues.

B. Alternatives Considered But Eliminated

Approximately 645 acres were originally considered for harvest entry but eliminated from consideration due to current stand conditions, riparian reserves, deferred watersheds, environmental education areas or wildlife concerns. All or portions of the following operational inventory units were deferred from entry at this time.

Table 1 -- Deferred Units

Township-Range-Section	OI Unit	Acres	Remarks
32S-2E-33	003	22	Riparian reserves in northeast part of Operations Inventory (OI) and adjacent to east/west section line.
33S-1E-01	003	14	Riparian reserve divides OI in half,
33S-2E-4	002	13	Riparian reserve, complex of springs in center of OI, wind throw common, springs are also adjacent to north/south ownership line on the north end of OI.

33S-1E-1	004	153	Riparian reserves and an owl core, with small patches of healthy mature timber between these reserves, no treatment necessary.
33S-1E-11	011	8	Pre-commercial size stand, will be treated under fuel hazard reduction.
	013	8	The area below the spur road is predominantly pre-commercial size class.
	001	32	Late successional reserve guidelines apply
	008	24	Late successional reserve guidelines apply
		21	Riparian reserve, two site potential tree width.
	010 015	37	Part of the 20% retention area for the deer and elk winter range.
33S-2E-9	002	8	Environmental Education Area - Military Trail
33S-2E-17	001	16	Primarily riparian reserve & Environmental Education Area. A small area adjacent to southern east/west line will be treated under fuel hazard reduction.
33S-2E-18	002	24	Part of the 20% retention area for the deer and elk winter range.
33S-2E-19	004	6	Reservoir buffer adjacent to Lost Creek Lake and hiking trail.
33S-1E-23	779	80	Reservoir buffer adjacent to Lost Creek Lake, portion is a pre-commercial size stand and will be treated under fuel hazard reduction.
33S-1E-23	005	8	Reservoir buffer adjacent to Lost Creek Lake, a portion and hiking trail.
33S-2E-31	007	53	Wildlife habitat area
33S-1E-35	005	17	Riparian reserve, meadow buffer and rock wall.
	006	11	Meadow buffer and riparian reserve.
		3	Meadow buffer
33S-2E-31	005	17	Wildlife habitat area
33S-1E-35	007	29	Meadow buffer
33S-2E-31	017	41	Wildlife habitat area and Deferred watershed.

	TOTAL	645	

Potential issues that were discussed but determined not to be important issues with this project can be found in the appendices. Discussions on wildlife, fisheries, cultural, visual resources, and botanical concerns can be found in the appendices.

C. ALTERNATIVE 1 -- NO ACTION

Analysis of this alternative provides a baseline against which the effects of the action alternatives can be compared. For this environmental assessment, the No Action Alternative is defined as no timber harvesting, no fuel hazard reduction, and no road renovation or closures.

D. ALTERNATIVE 2

The intent of this alternative is to achieve the goals, objectives, and desired future condition for the timber stands as specified in the Northwest Forest Plan and the Medford District Resource Plan. On matrix lands, emphasis is placed on maximizing commodity production of the timber resource and reducing fire hazard conditions. This alternative is also intended to reduce road related sedimentation by improving existing road conditions and decommissioning of roads no longer need for access. This alternative includes the projects described below.

Timber Harvest (Stand density reduction and regeneration of declining forest stands)

The overall scope of this action alternative covers approximately 500 acres of BLM managed lands designated as Matrix. Matrix lands include Southern General Forest Management Areas, Northern General Forest Management Areas and Connectivity Blocks. This alternative consists of five treatment methods.

1. Density management is proposed on 340 acres. This treatment targets the removal of individual trees to maintain or enhance forest diversity and growth. Removal of smaller trees and trees in direct competition with healthy co-dominant and dominant trees would redirect site resources towards the development and maintenance of large healthy trees. Canopy closure following treatment would be approximately 50-60%.
2. Structural retention regeneration harvesting is proposed on 69 acres. This Southern General Forest

Management Area (SGFMA), treatment would retain 16-25 trees per acre greater than 20 inches in diameter at breast height. Using tree crown ratio and form as the selection guide, retention trees, would be the most vigorous trees available. Spatial distribution of these trees would vary from individual trees to groups. Healthy understory ponderosa pine, sugar pine, incense cedar and Douglas-fir trees free of insects and disease or damage would be left. Wildlife snags and coarse woody debris would be designated for retention. All other trees would be removed leaving a canopy closure of 25-40%. Planting of conifer seedlings would occur following harvest.

3. Modified even-aged regeneration harvesting is proposed on 12 acres. This Northern General Forest Management Area (NGFMA), treatment would retain 6-8 trees per acre greater than 20 inches in diameter at breast height. Using tree crown ratio and form as a guide, retention trees, would be the most vigorous trees available. Spatial distribution of these trees would vary from individual trees to groups. Healthy understory ponderosa pine, sugar pine, incense cedar and Douglas-fir trees free of insects and disease or damage would be left. Wildlife snags and coarse woody debris would be designated for retention. All other trees would be removed leaving a canopy closure of 10-15%. Planting of conifer seedlings would occur following harvest.

4. Selection harvesting is proposed on 65 acres. This treatment removes poor vigor trees from all diameter classes. Stand densities would be reduced, freeing up site resources (water, nutrients, light and growing space) for the remaining trees. Tree crown ratio and form and desired basal area, not spacing, would be the primary factors in determining the trees to be left or removed. Canopy closure would range from approximately 50-60% with stand structure multi-aged and multi-layered.

5. Modified even-aged regeneration harvesting in a connectivity block is proposed on 17 acres. This Northern General Forest Management Area (NGFMA), treatment would retain 12-18 trees per acre greater than 20 inches in diameter at breast height. Using tree crown ratio and form as a guide, retention trees, would be the most vigorous trees available. Spatial distribution of these trees would vary from individual trees to groups. Healthy understory ponderosa pine, sugar pine, incense cedar and Douglas-fir trees free of insects and disease or damage would be left. Wildlife snags and coarse woody debris would be designated for retention. All other trees would be removed leaving a canopy closure of 15-25%. Planting of conifer seedlings would occur following harvest.

Fuel Hazard Reduction

Understory density reduction in low elevation conifer stands, oak woodlands and brush fields would reduce crown fire potential through the removal of ladder fuels as well as enhance growth in younger stands.

The treated areas would provide landscape-wide strategic areas where dense vegetation is reduced, the

likelihood of crown fires would be lowered, and the risk of catastrophic change to the ecosystem during wildfires would be lowered

The scope of this alternative covers 2625 acres of BLM managed lands, with approximately 529 acres located within Riparian Reserves. Of these, 2625 acres, 1550 acres are included in the Wildland Urban Interface (WUI). In conifer stands trees 1"-6" in diameter would be reduced through thinning. Spacing will normally range from 14'X14' to 45'X45' maintaining a canopy closure of approximately 60%-70%. In oak/pine savannahs and woodlands, hardwoods 1" to 6" in diameter would be reduced through thinning, where spacing will normally range from 15'X15' to 45'X45'. In brush fields, 30%-40% of the shrub species would be thinned where spacing will normally range from 20'X20' to 45'X45', creating a mosaic brush pattern over the project area. There are three secondary benefits associated with fuels treatment, the first is to re-introduce fire back into the ecosystem. The second benefit is to reduce moisture competition by reducing competition within the stand to produce healthier more vigorous trees that are more resilient to large scale disturbances. The third benefit is to increase wildlife forage.

Understory fuels reduction would be achieved by a combination of three treatment methods.

1. Hand treatment (thin, pile and burn)
2. Slash buster
3. Prescribed burning

1. Hand treatment – thin the understory, utilizing chainsaws to manually reduce hazardous fuels on approximately 1515 acres (excludes Riparian Reserves). This consists of manually slashing understory vegetation. Selected leave trees along road systems will be pruned to reduce potential for torching in the event of a fire. Hardwood and conifer tree spacing will normally range from 15'X15' to 45'X45' and 14'X 14' to 45'X45' respectfully. Where shrubs exist, 30%-40% of the shrub species would be thinned where spacing will normally range from 20'X20' to 45'X45'. The debris resulting from the action will be hand piled and burned during the wet season when the risk of an escaped fire is low. In these units, a low intensity ground fire would be implemented when fuel loading begins to increase shifting the area into a Condition Class 2. The re-entry is expected to occur between 5 to 7 years after the hand piles have been burned. All fuels reduction treatments within Riparian Reserves, would be accomplished under this method.

2. Slash buster – a slashbuster would be used for understory thinning of vegetation such as brush, small diameter conifers and hardwood species (7" DBH or less) on approximately 284 acres. In brush fields, 30%-40% of the shrub species would be thinned where spacing will normally range from 20'X20' to 45'X45', creating a mosaic brush pattern over the project area. The primary objective is to thin dense understory vegetation thereby reducing ladder fuels. The slashbuster treatment would occur within units where slopes are not greater than 35%. In these units, a low intensity ground fire would be implemented when fuel loading begins to increase shifting the area into a Condition Class 2. The re-entry is expected to occur between 5 to 7 years after the hand piles have been burned.

3. Prescribed fire- approximately 297 acres would be treated where fuel loadings are low enough over the majority of the areas. Prescribed fire will be used as the initial entry where fuel loadings allow for low fire activity. Prescribed fire will be used as a secondary treatment where the fuel loadings have been reduced to levels that allow for safe implementation. Some hand slashing of vegetation may occur in brush pockets prior to burning. In areas where the primary fuel bed is comprised of dead fuels (both natural and slash) burns will be implemented when fuel moistures are high. By burning when fuel moistures are high, larger fuels found within the primary fuel bed would contain more moisture thereby lessening the potential for coarse woody debris to be consumed. No active lighting would be allowed within riparian reserves, but fire would be allowed to back into riparian reserves. On occasion, handlines would be located within riparian reserves on logical locations where topography breaks occur. The main benefit of this treatment will be the re-introduction of fire back into a fire dependent ecosystem.

Fuel Hazard Reduction within Riparian Reserves

The goals and objectives of fuels reduction treatments within Riparian Reserves are similar to those stated above.

Fuel hazard reduction within Riparian Reserves is proposed on 529 acres within the project area.

The fuels reduction prescription would thin small-sized non-commercial conifer saplings and poles, hardwoods (7" dbh and less) and brush species maintaining a 70% canopy closure. These treatments would reduce the amount of ground fuels and ladder fuels that increase catastrophic fire conditions. Within Riparian Reserves all fuels reduction treatments would occur by hand or through controlled underburning. Under certain climatic and topographic conditions, stream draws on the lower and middle third of the mountain may act as fire pathways and channel wildfire up a mountain slope. Reducing fuels within the Riparian Reserves will lower that risk.

Fuels Reduction Treatment Prescriptions within Riparian Reserves

There are three distinct vegetative communities, or vegetative conditions within the proposed treatment area that are typical of the low elevation Cascades Range in southern Oregon that require distinct vegetative fuel reduction prescriptions. These include:

1. Overstocked conifer stands
2. Low elevation oak savannahs or woodlands where the brush species is the dominate vegetative component.
3. Low elevation oak savannahs or woodlands where white oak, black oak or mix with pacific madrone is the dominant vegetative component.

The first vegetative condition is characterized by overstocked conifer stands comprised of densely spaced sapling and pole size trees with dead limbs to the ground that create stand conditions with high fuel hazard. The brush and hardwood component is generally small to non-existent and the overstory may contain large diameter Douglas –fir (*Pseudotsuga menziesii*), ponderosa pine (*Pinus ponderosa*) or sugar pine (*Pinus lambatina*).

Conifer Community Treatment Prescription Summary

1. Riparian Reserve is 330 feet for non-fish bearing streams
2. No-treatment area of 100 feet along stream core
3. Target conifer sapling and pole size trees for removal in the understory that are suppressed and 7” dbh and under.
4. For conifer retention, blend a combination of dominant trees, tree diameter, crown size, and variable spacing of remaining trees.
5. Retain 70% canopy closure minimum
6. Hand treat area. No wheeled or track mounted equipment off existing roads within the riparian reserves.
7. Minimize the amount of hand piles within riparian reserve to meet fuel reduction objective

The second vegetative condition is characterized by the dominance of wedge leaf ceanothus or buck brush (*Ceanothus cuneatus*) as the main component of the vegetative community. Some areas of buck brush may be dense and impenetrable, while other areas may include open patches with grasses and forbs, or mixed with white oak (*Quercus garryana*), black oak (*Quercus kelloggii*), and Pacific madrone (*Arbutus menziesii*) hardwoods.

Shrub, Chaparral, or Meadow Communities Treatment Prescription Summary

1. Riparian Reserve is 200 feet for non-fish bearing streams
2. No-treatment area of 100 feet along stream core
3. Target buck brush for removal and retain oaks and madrones .
4. Hand treat area. No wheeled or track mounted equipment off existing roads within the riparian reserves.
5. Minimize the amount of hand piles within riparian reserve to meet fuel reduction objective

The third vegetative condition is characterized by the dominance of white oak, black oak or a mix of white oak/black oak and madrone hardwoods with wedgeleaf ceanothus as a brush component. Some areas of black oak and madrone may be dense while other areas may be open with patches of grasses and forbs, or mixed with varying density of buckbrush.

Black Oak and Madrone Community Treatment Prescription Summary

1. Riparian Reserve is 200 feet for non-fish bearing streams
2. No-treatment area of 100 feet along stream core
3. Target buck brush for removal. Some pockets of black oak and madrones would be thinned (8" dbh and less).
4. Hand treat area. No wheeled or track mounted equipment off existing roads within riparian reserves.
5. Minimize the amount of hand piles within riparian reserve to meet fuel reduction objective

Road Related Sediment

Road Renovation

This consists of work to be performed on the road prior to its use. The work includes, but is not limited to, blading the road surface, blading ditch-lines, cleaning or enlarging catch basins, flushing corrugated metal pipes (CMP), removing brush near the inlet or outlet of pipes, cleaning inlet and outlet end of pipes, and removing brush, limbs, and trees along the roadway to improve sight distance, and allow for proper road maintenance. All drainage structures, including CMP's, water dips, and ditch relief outlets, shall be inspected and required work performed so that water flow is not impeded. These actions would occur on approximately 25 miles of road.

Road Improvement

The objective of road improvement is to upgrade existing roads to reduce erosion and sediment deposits into streams. These actions would include improving drainage and/or surfacing on approximately 3 miles of road. There also would be 2 or 3 culvert upgrades in size to meet 100 year flood standards and approximately 11 new culverts installed on existing roads to improve drainage.

Full Road Decommissioning

Roads determined through an interdisciplinary process to have no future need would be sub-soiled (or ripped), seeded with native grasses or others as appropriate, mulched, and planted to reestablish vegetation. Cross drains, fills in stream channels, and potentially unstable fill areas would be removed to restore natural hydrologic flow. The road would be closed with a device similar to an earthen barrier or equivalent. The road would not require future maintenance. These actions would occur on approximately 1.5 miles of road.

Helicopter Landings

Approximately 10 landings have been identified to be used for the proposed harvest activities. These landings have been identified on BLM and private land. A number of these landings are in openings such as existing landings or road junctions and will require minimal construction or additional site disturbance to provide for safe landing activities. The remaining landings which are on BLM land will be constructed but would be decommissioned following completion of logging activities. Decommission would include ripping, seeding with native grasses and mulching. All landings would be less than 1 acre in size.

Operator Spur Construction

Approximately 17 operator spurs are needed for access, for a total of approximately 2.6 miles of length. After harvesting, the spurs would be fully decommissioned

E. ALTERNATIVE 3

The intent of this alternative is to achieve the goals, objectives, suggested actions and desired future condition for the timber stands as specified in the Northwest Forest Plan, the Medford District Resource Plan and the Lost Creek watershed analysis. Emphasis of this alternative is to provide a higher level of connectivity, stand structure and canopy closure within treated forest stands. Reduction of fire hazard within this area would also reduce the potential that connectivity, stand structure and canopy cover would be lost as the result of a catastrophic wildfire. This alternative is also intended to reduce road related sedimentation by improving existing road conditions and decommissioning of roads no longer need for access. This alternative includes the projects described below.

Timber Harvest (Stand density reduction and regeneration of declining forest stands)

This alternative consists of four treatment methods.

1. Density management is proposed on 346 acres.
2. Structural retention regeneration harvesting is proposed on 12 acres.
3. Modified even-aged regeneration harvesting is proposed on 6 acres.
4. Selection harvesting is proposed on 139 acres.

(The descriptions of each of the treatments are the same as under Alternative 2)

Fuel Hazard Reduction

The area of treatment, 2625 acres, is the same as Alternative 2. Under this alternative three treatment methods would be used. The description of each method is the same as in Alternative 2.

Understory fuels reduction would be achieved by a combination of three treatment methods.

1. Hand treatment (thin, pile and burn) --- 1515 acres
2. Slash buster --- 284 acres
3. Prescribed burning --- 297 acres

Fuel hazard reduction within Riparian Reserves is proposed on 529 acres. Fuel reduction prescriptions are the same as those described under Alternative 2.

Road Related Sediment

The same activities that are described in alternative 2 would be completed in this alternative.

F. ALTERNATIVE 4

Timber Harvest

The overall scope of this action alternative covers approximately 500 acres of BLM managed lands designated as Matrix. Matrix lands include Southern General Forest Management Areas, Northern General Forest Management Areas and Connectivity Blocks. This alternative consists of five treatment methods, this alternative is the same as Alternative 2.

Fuels Reduction

The area of treatment, 2625 acres, is the same as Alternative 2. Under this alternative two treatment methods would be used. The description of each method is the same as in Alternative 2.

1. Hand Treatment (thin, pile and burn) – 1628 acres
2. Prescribed Burning – 468 acres

Fuel hazard reduction within Riparian Reserves is proposed on 529 acres. Fuel reduction prescriptions are the same as those described under Alternative 2.

By implementing this alternative, 2625 acres of understory density reduction will be completed in conifer stands, oak woodlands and brush fields, using hand treatments and through prescribed burning. These treatments would reduce the likelihood of crown fires and lower the risk of catastrophic change to the ecosystem during wildfires. The major difference between this alternative and alternatives 2 and 3 is cost/acre

and acre accomplishments. By using the slashbuster the cost per acre would decrease allowing for more acres to be treated in less time.

Road Related Sediment

The same activities that are described in alternative 2 would be completed in this alternative.

G. ALTERNATIVE 5

Timber Harvest (Stand density reduction and regeneration of declining forest stands)

The overall scope of this action alternative covers approximately 500 acres of BLM managed lands designated as Matrix. Matrix lands include Southern General Forest Management Areas, Northern General Forest Management Areas and Connectivity Blocks. This alternative consists of four treatment methods, this alternative is the same as Alternative 3.

Fuels Reduction

The area of treatment, 2625 acres, is the same as Alternative 4. Under this alternative two treatment methods would be used. The description of each method is the same as in Alternative 4.

1. Hand Treatment (thin, pile and burn) – 1628 acres
2. Prescribed Burning - 468 acres

Fuel hazard reduction within Riparian Reserves is proposed on 529 acres. Fuel reduction prescriptions are the same as those described under Alternative 4.

Road Related Sediment

The same activities that are described in alternative 2 would be completed in this alternative.

Table 2 -- Description of Alternatives

Management Action	Alternative	Alternative	Alternative 3	Alternative 4	Alternative 5
	No Action	<u>Timber Harvest</u> ROD/RMP	<u>Timber Harvest</u> Canopy retention	<u>Timber Harvest</u> ROD/RMP	<u>Timber Harvest</u> Canopy retention
		<u>Hazardous fuels</u> Mechanical hand & prescribed fire treatments	<u>Hazardous Fuels</u> Mechanical hand & prescribed fire treatments	<u>Hazardous fuels</u> Hand & prescribed fire treatments	<u>Hazardous Fuels</u> Hand & prescribed fire treatments
Stand density reduction & regeneration of declining forest stands. Approximate treatment acres: 503.					
Acres by treatment type:					
• Density management	0	340	346	340	346
• Selective cut	0	65	139	65	139
• Regeneration harvest					
-- Modified Even Aged	0	12	6	12	6
Structural Retention	0	69	12	69	12
-- Modified Even-aged /	0	17	0	17	0
--					
Estimated Volume: Connectivity		4-5 mmbf	3-4 mmbf	4 -5mmbf	3-4 mmbf
Acres by logging method					
• Tractor	0	379	379	379	379
• Cable	0	31	31	31	31
• Helicopter	0	93	93	93	93

<p>Hazardous fuels reduction & restoration of low elevation plant communities. Approximate treatment acres: 2625.</p> <p>Acres by treatment type:</p> <ul style="list-style-type: none"> • Slashbuster • Prescribed fire • Understory thinning (handpile and burn) • Riparian understory thinning 	0	284	284	0	0
	0	297	297	468	468
	0	1515	1515	1628	1628
	0	529	529	529	529
<p>Improving water quality by reducing sedimentation from roads</p> <ul style="list-style-type: none"> • Miles of roads improved renovated • Operator Spur (Temporary) • Road closure Seasonal/Temporary • Full Decommission • Partial Decommission • Helicopter Service & Landings • Pump chances 	0	28	28	28	28
	0	3	3	3	3
	0	4	4	4	4
	0	.5	.5	.5	.5
	0	1	1	1	1
	0	10	10	10	10
	0	1	1	1	1

H. MANAGEMENT ACTIONS COMMON TO ALL ACTION ALTERNATIVES (Project Design Features--PDF)

Wildlife

- No known bald eagle nest trees, perch trees, or roost trees would be cut. Suitable eagle habitat within ¼ mile of the nest would not be removed. Large snags within ½ mile of the nest would not be cut, except as needed to protect human safety.
- Seasonal restriction from January 1 to August 31 for work activities within ¼ mile (1/2 mile line-of-site) from occupied eagle nest.
- Seasonal restriction of March 1 to September 30 within ¼ mile of known spotted owl sites (within ½ mile for helicopter operations). This seasonal restriction may be waived if non-nesting is determined. If any new owls are discovered in harvest units following the sale date, the contract enables a halt to activities until mitigation options can be determined.
- Seasonal restriction February 1 to July 15 within ½ mile of known peregrine falcon nest sites, within 1 mile from February 1 to August 15 for blasting or helicopter operation.
- Protect osprey nests with 5 acre no harvest buffer and seasonal restriction for activities within ¼ mile of nest site from March 1 to August 31.
- Seasonal restriction within ¼ mile of northern goshawk nest from March 1 through August 30. If any new goshawks are discovered in harvest units following the sale date, the contract enables a halt to activities until mitigation options can be determined.
- Protect sharp shinned hawk nest with 10 acre no harvest buffer and seasonal restriction for activities within ¼ mile of nest tree from March 1 to July 15.
- Protect known great gray Owl nests with ¼ mile (125 acres) buffer. If any new great gray owl nest area discovered in harvest units following the sale date, the contract enables a halt to activities until mitigation options can be determined.
- Meadows and natural openings would be buffered with a 300 foot no commercial harvest buffer (pre-commercial thinning, hand piling and burning would be allowed).
- Protect additional raptor species if located and apply the appropriate buffers and seasonal restrictions.
- Maintain all snags except those which need to be felled for safety reasons. Those snags that must be felled for safety would be left on site.
- Seasonal restriction and road closure in designated Jackson County Cooperative Travel Management Area (JACTMA) from October 15 to April 30.
- Protect survey and manage mollusk sites and associated habitat. Buffer sizes would be determined by species and proposed treatment.
- Broadcast burning, and site preparation will not take place within ¼ mile of known active northern spotted owl nests between March 1 and July 15.
- Burning or helicopter operations will not take place within ½ mile of active bald eagle nests between January 1 and August 31.

Archeology

- Apply mitigating measures to areas where there are known archeological sites. Buffer sizes would be determined based upon, proposed treatment, site-specific environmental conditions, and protection recommendations.

Special Status and Survey and Manage Plants

- Protect Special Status and Survey and Manage vascular plant, lichen, bryophyte, and fungi sites. Buffer sizes would be determined based upon species, proposed treatment, site-specific environmental conditions, and protection recommendations.

Noxious Weeds

- Ensure that seed, feed grains, forage, straw, and mulch are free of weed reproductive plant parts, as per the North American Weed Free Forage Certification Standards.
- In regeneration harvests, where operationally feasible, maintain vegetation cover along a 30' strip adjacent to roads and located outside of the road prism to provide shading (at least 50% canopy cover), reducing the chances of sun-loving weeds from becoming established.
- In brush fields, if the overstory canopy cover is below 50%, retain a 5-10' strip of vegetation adjacent to roads and located outside of the road prism to provide shading, reducing the chances of sun-loving weeds from becoming established.
- Prior to entry onto BLM administered lands, all vehicles and equipment that will travel off of system roads, shall be inspected for noxious weed seeds and plant parts, and deemed free of said contaminants.
- Following fuel hazard reduction and timber harvesting activities, units will be monitored for noxious weed species. Under Medford District Integrated Weed Management Plan and EA # OR110-98-14, found sites of noxious weeds will be treated using one or several methods as listed in the EA. All PDF's as listed in EA # OR110-98-14 shall be adhered to during treatment.

Equipment Use

- A Spill Prevention, Control and Countermeasure Plan (SPCC) would be required prior to operation and would include, but not limited to, hazardous substances to be used in the project area and identification of purchaser's representatives responsible for supervising initial containment action for releases and subsequent cleanup.
- All hazardous materials and petroleum products would be stored outside of the Riparian Reserves, in durable containers and located so that any accidental spill would be contained and not drain into the stream system.
- Refueling of equipment would be outside of the Riparian Reserves.

Roads and Quarries

- Minimize the construction of new permanent or temporary roads through Riparian Reserves.

- All road renovation, closure, and/or improvement work would be restricted from October 15 to May 15 or when soil moisture exceeds 25 percent.
- Block or barricade identified roads after use and before beginning of rainy season (generally October 15).
- All roads identified for decommissioning would be seeded with native seed and mulched in the same operational season they are decommissioned, and would be planted with trees and shrubs as needed.
- No application of dust abatement materials such as lignin, Mag-Chloride, and/or approved petroleum based dust abatement products during or just before wet weather and at stream crossings or other locations that could result in direct delivery to a water body (typically not within 25' of a water body or stream channel.)
- Location of waste stockpile and borrow sites resulting from road construction or reconstruction should be at least one site potential tree length (165 feet) from a stream where sediment-laden runoff can be confined.
- When removing a culvert, pull back the slopes to the natural slope or at least 1:1 to minimize sloughing, erosion and potential for the stream to undercut streambanks during periods of high streamflows.
- Seasonally restrict all quarry development, rock crushing and rock hauling operations from Oct. 15 to May 15 or when soil moisture conditions or rainstorms could cause transport of sediments to nearby stream channels.
- Construct silt fences or other preventative structures (diversion ditches, settling ponds) to prevent the potential for runoff from quarry operations into nearby stream channels.
- Grass seed and/or plant native vegetation to stabilize all exposed soil areas including overburden from quarry operations.
- If explosives are necessary in the quarry development, then require a detailed blasting plan that addresses minimizing the amount of rock material the may enter any adjacent stream channels.
- Locate all waste disposal areas away from riparian reserves.

Fuel Hazard Reduction

- Selected areas of the chaparral vegetative community would be seeded with native grasses, as available on fuel treatment areas as appropriate.
- For all slash-buster treatment areas, minimize ground disturbance by walking equipment over slashed vegetation where possible, as a blanket to protect mineral soil.
- For heavy equipment operations, intermittent and ephemeral stream crossings would be pre-designated by an authorized officer to prevent stream bank degradation. Slash buster operations would be parallel to intermittent and ephemeral draws. All bare soils resulting from equipment crossing these streams would be grass seeded with an appropriate species mixture to reduce erosion.
- On occasion handlines would be located within the riparian reserve on logical locations and where topography breaks occur.

- No fire retardant chemicals would be used within Riparian Reserves under the proposed fuels treatment projects.
- No slash-buster treatments would occur within Riparian Reserves.
- All proposed management activities adjacent to non-fish bearing streams would have a minimum 50' no treatment core on each side of the stream channel.
- Locate all waste disposal areas away from riparian reserves.
- All intermittent and perennial streams that flow below the reservoir with an inner gorge slope that is 35% or greater will not have any treatments done within the full riparian buffer.
- Ephemeral streams that have an inner gorge slope that is 35% or greater will have a 50' no treatment buffer on each side of the channel.
- Adjacent to the hiking trail around Lost Creek Lake and the Viewpoint Mike trail a 25' no treatment buffer would be maintained where the slashbuster is used. In areas treated by hand no handpiling would be done within the 25' buffer.
- Fuel hazard reduction activities adjacent to designated recreational areas (Hiking trails and Four Corners and Fire Glen campgrounds) will be restricted during periods of high recreational use (April until after the July 4th weekend) After the July 4th weekend and until September 30, hours of operation will be limited to an 8 AM start-up time.
- No meadows larger than one acre in size will have slashbuster treatment except from the periphery where the machine can reach. Meadows are defined as shallow or rocky soil areas with forbs, or grasses as the primary vegetative component with scattered shrubs.
- Pre-existing coarse wood material greater than 8" diameter would be protected from shredding or damage to the greatest extent possible.
- The slash-buster would be restricted to designated access points from the main road. Post project, a combination of brush, logs, and other natural material would be placed across the equipment access point for rehabilitation and to discourage OHV use in the treatment areas.
- Within 150' of the 32S-1E-27 road, Highway 62 and the Lost Creek shoreline trail, all hand piles shall be spread after burning to decrease or eliminate visual contrasts of blackened burned piles.
- Underburn units adjacent to the Lost Creek shoreline trail will have a 25' buffer between the trail and ignition line. No fire line will be constructed at the ignition line. The fire may back down to the trails edge.

Timber Harvest

- Crossing of the Historic Military road in 33S-2E Sections 8 and 9 will be limited to one designated crossing. The crossing will be no wider than 20 feet, and following project completion the Historic Military road shall not be ripped or bladed.

- Minimize the total number of skid roads by designating skid roads with an average of 150' spacing. Avoid creating new skid roads and utilize existing roads where feasible in order to minimize ground disturbance, especially in thinning and selective cut units where no tillage is proposed.
- All tractor yarding, soil ripping, and excavator piling operations would be restricted from October 15 to May 15 or when soil moisture exceeds 25 percent.
- Lop and scatter pile activity slash, or underburn activity slash as necessary to reduce or Burn piled slash during the fall and winter to reduce impacts eliminate additional fuel loading.
- Restrict tractor and/or mechanical operations to slopes generally less than 35 percent. In areas where it is necessary to exceed 35 percent, utilize ridge tops where possible.
- On all quality. All burning would follow the guidelines of the Oregon Smoke Management Plan.
- Waterbar all skid roads and firelines during the same operating season, as constructed.
- Skid roads would be located to minimize disturbance to coarse woody debris. Where skid roads encounter large, coarse woody debris (CWD) a section of the CWD is to be bucked out for equipment access. The remainder of the CWD is to be left in place and not disturbed.
- Areas identified to be ripped (skid roads, landings, decommissioned roads) would be ripped to a depth of 18 inches utilizing a sub-soiler or winged toothed rippers.
- Ripping of skid trails would occur in all tractor yarded regeneration units.
- No commercial timber harvesting would occur in Riparian Reserves.
- Locate all waste disposal areas away from riparian reserves.
- Adjacent to the hiking trail around Lost Creek Lake, the Viewpoint Mike trail, a 25' no treatment buffer would be maintained. Trees will be directionally felled away from the trail in Section 27.
- Harvest activities adjacent to designated recreational areas (Hiking trail and Four Corners and Fire Glen campgrounds) will be restricted during periods of high recreational use (April until after the July 4th weekend). After the July 4th weekend and until September 30, hours of operation will be limited to an 8 AM start-up time.

CHAPTER III AFFECTED ENVIRONMENT

A. Introduction

This chapter describes the present condition of the environment within the proposed Flounce Around project area that would be affected by the alternatives. The information in this chapter would serve as a general baseline for determining the effects of the alternatives. No attempt has been made to describe every detail of every resource within the proposed project area. The information is organized around the major issues identified by the interdisciplinary team. Only enough detail has been given to determine if any of the alternatives would cause significant impacts to the human environment as defined in 40 CFR 1508.27. Surveys have been completed for cultural resources, threatened and endangered plants and animals, and special status plants

and all required survey and managed surveys have been completed.

The following critical elements are not known to be present within the proposed project areas, or would not be affected by any of the alternatives, and will not be discussed further: Areas of Critical Environmental Concern (ACEC), Cultural Resources, Prime or Unique Farmlands, Flood plains, Native American Religious Concerns, Water Quality, Wetlands, Wild and Scenic Rivers, and Wilderness.

B. General Description of the Proposed Project Area

A description of the land areas and resources in the Butte Falls Resource Area is presented in Chapter 3 of the Final Medford District Resource Management Plan/Environmental Impact Statement (RMP 1995).

For a detailed description of the watershed refer to the Lost Creek and Lower Big Butte Watershed Analyses, completed June 1999. These documents are available at the Butte Falls Resource Area, Medford District BLM Office.

C. Forest Condition - Dense and Declining Forest Stands

Elevation, slope, aspect and soil depth define the presence and abundance of vegetative species. Within the majority of the project area, these factors have combined to create a moisture limiting environment that restricts vegetative growth. The elevation range within the project area is between 1900 feet above sea level at the edge of Lost Creek Lake up to 4100 feet at the top of Flounce Rock, with most of the proposed management actions occurring below 3000 feet. These low elevation sites tend to have a wide fluctuation of night to daytime temperatures as well as high evapotranspirational demand by plants during periods of high summer temperatures. Low water availability, combined with the loss of the natural thinning effects of wildfire has created dense stagnant forest stands. Stands that are dense and overstocked have more trees than the site has moisture, nutrients and growing space to sustain. Without adequate resources, tree growth and vigor declines, increasing the probability of tree mortality from insects or disease. These conditions are common throughout the project area in most forest stands, independent of age or size class. Stand examinations and field reviews confirm this condition as many stands are at density levels above the carrying capacity of the site, resulting in stocking levels that are not ecologically sustainable.

There are four forested plant series present within the project area. They are Oregon white oak, ponderosa pine, Douglas-fir and white fir. These plant series generally follow an elevation gradient from lowest to highest. The Oregon White Oak series occupies low, hot, dry sites with shallow soils, and it is commonly found on southerly aspects. The ponderosa pine series occurs on sites with shallow droughty soils but generally is found at slightly higher elevations than the Oregon White Oak series. At higher elevations or on sites with a more northerly aspect the Douglas-fir series occurs. The white fir series occupies the highest elevation sites in the project area. These sites are the most productive as well as the coolest and wettest.

Two non-forested plant communities are also common with the project area. The first is a shrub or chaparral community, common shrub species include: buckbrush (*Ceanothus cuneatus*), deerbrush (*Ceanothus integerrimus*), poison oak (*Rhus diversiloba*), and whiteleaf manzanita (*Arctostaphylos viscida*). Tree species present may include black oak (*Quercus kelloggii*) and madrone (*Arbutus menziesii*) with conifer species generally lacking in the overstory. The second non-forested community is meadows.

Meadows are present throughout the area and typically can be found on very shallow soils that experience hot and dry temperatures during the summer. Meadows vary in vegetative composition and may include a variety of mosses, mat forming shrubs, grasses and herbs. Rock outcrops are also common.

D. Fuel Hazard Reduction

The Flounce Around project area consists of 21,380 acres located around the Lost Creek Lake area within the Lost Creek Watershed. Within the project area 7,952 acres are managed by BLM, of which 2,625 acres are proposed for fuel treatments.

Current fire hazard and fire history

Fire hazard is based upon the ability of wildfire to spread and the amount of firefighting resources required to suppress the fire once it has ignited. There are four categories to describe fire hazard; extreme, high, moderate, and low. The components that determine an areas fire hazard include, fuel model, fire regime, slope, aspect, elevation, and condition class. In the area proposed for fuel treatments, 1357 acres are considered at high to extreme fire hazard, 1235 acres are considered moderate to high fire hazard and 33 acres are considered at moderate to low fire hazard, see spreadsheet in Appendix G.

The table below describes the fire history in the Flounce Around area since 1960. Many of the human caused fires are started within recreation areas and or those areas designated as Wildland Urban Interface (WUI).

Table 4 - Fires by decade

Decade	Natural Caused	Acres	Human Caused	Acres	Total Acres
1960	1	1.1	2	.2	1.3
1970	16	4.7	20	104.4	109.1
1980	11	320	28	3.2	323.7
1990	25	1.4	14	18.5	19.9
2000	5	.2	15	6.9	7.4

Fire Regimes and Condition Classes

Due to fire exclusion, fuel loadings and the continuity of fuels have increased, thereby increasing the risk of more severe wildfires. Within the Flounce Around project area, fire regime and condition class are used to describe how much the vegetative communities have changed from historic or “natural” levels. Fire regimes for vegetation communities are determined by species composition, stand dynamics, fire return interval, fire intensity, fire size, season of occurrence and fire severity (Agee, 1993). The varying combinations of these fire regime components determine how a wildfire will burn. Conditions classes define how much the vegetative community has changed within its fire regime by comparing current conditions to historic conditions.

Two fire regimes are present in the project area:

- Fire regime 1 - occurs in the lower elevations where the Oregon white oak, ponderosa pine and non-forested plant communities are present. Low intensity fires are common and typically occur every 0-35 years. Wildfires consume small

diameter woody debris, along with the leaf and needle layer. The duff surface may be charred and little or no soil heating occurs.

- Fire regime 3 - occurs in the upper elevations where Douglas-fir and white fir are the predominate forest plant communities, fires return on an interval of 35-100+ years. This vegetation type has fires that burn in a mosaic pattern with moderate severity. These fires would burn with low intensity in some areas and higher intensity in other areas, resulting in a mosaic of different stand structures and ages.

Three condition classes are present within the project area:

- Condition class 1 is defined as a fire regime that is within historical fire return interval. The species composition, stand structure, stand age, canopy closure, and fire frequency has been slightly altered. Thus the risk of losing key ecosystem components from the occurrence of fire remains relatively low. Appendix G, (USDA, DOI,2000. National Fire Plan)
- Condition class 2 is defined as those sites that have been moderately altered from their historical fire regimes by either increased (human caused) or decreased (suppression) fire frequency and there is a moderate risk of losing key ecosystem components. (USDA, DOI,2000. National Fire Plan)
- Condition class 3 is defined as those sites that have been significantly altered from their historical fire regimes because the fire return intervals have been extensively altered, the risk of losing key ecosystem components from fire is high (USDA, DOI,2000. National Fire Plan)

In areas classified as Condition Class 2 and 3, before fire can be re-introduced to manage fuels or obtain other desired benefits, these lands may require multiple treatments to reduce the fuel loadings and continuity of fuels. If an area is classified as a Condition Class 2 or 3 and a fire starts in or near the area, the existing fuel loadings will result in a more severe fire than historically occurred. To restore these areas to a Condition Class 1 within their fire regimes, these lands may require some level of treatment through prescribed fire, or mechanical treatments and the subsequent re-introduction of native plants. (Restoring Fire-Adapted Ecosystems on Federal Lands. A Cohesive Fuel Treatment Strategy for Protecting People and Sustaining Natural Resources; April, 2002 pg 30)

Table 5 shows the percent of each condition class for the two fire regimes found in the Flounce Around project area.

Condition Class	Fire Regime 1	Fire Regime 3
Condition Class 1	10%	20%
Condition Class 2	20%	35%
Condition Class 3	70%	45%

Overall the project area is considered to be in a Condition Class 3 based on the stand structure and species composition. In the absence of fire, the development of a dense, decadent brush understory and a closed canopy overstory consisting of conifers and hardwoods (fuel model 6) has occurred. Ladder fuels and the horizontal continuity of dead and down material have increased. In the event of a wildfire during fire season, the flame lengths are expected to be between 7 feet to 15 feet. The increased level of dead and down material increases the fire intensity, and with ladder fuels present, allows fire to easily reach the tree crowns.

Topography also contributes to flame length and fire intensity, the greater the slope the more intense the expected fire behavior and risk for a crown fire increases (please refer to Nexus runs in Appendix G).

The representative fuel model that reflects the fire behavior of the natural fire return interval or Condition Class 1 would be either a Fuel Model 2, 8, or 9 with a low to moderate fire hazard. Each of these fuel models have minimal ladder fuel components and low flame lengths ranging between 2 and 8 feet. The fire will be a surface fire, consuming only small diameter fuels, the litter layer and portions of the duff layer. The fire behavior will be of low severity and intensity as was found historically. In some portions of Fire Regime 3, some areas may experience high severity and intensity over patches across the landscape. This is acceptable since that is how fire burns historically in that fire regime creating a heterogeneous landscape.

With the removal of the ladder fuel component and decreased fire behavior, the ability to initiate a crown fire would be greatly reduced allowing fire fighters to safely initiate suppression tactics. The importance of flame length deals with fire fighter safety and the ability to contain fire spread.

Flame lengths less than 4 ft: Can be attacked by persons using hand tools. Hand line will generally hold the fire.

Flame lengths 4-8 ft: Cannot be attacked by hand, hand line generally will not hold. Equipment such as pumpers, dozers, and aircraft can be effective.

Flame lengths 8-11 ft: Fires in this range may present serious control problems such as torching.

Flame length greater than 11 ft: Crowning, spotting, and major runs are probable.

Air Quality

Fuels management activities generate particulate pollutants in the process of treating natural and activity related fields. Smoke from prescribed fire has the potential to effect air quality within the project area as well as the surrounding areas. The use of prescribed fire for ecosystem restoration can produce enough fine particulate matter to be a public health and/or welfare concern. Fire particulates in smoke can travel many miles downwind impacting air quality in local communities, causing a safety hazard on public roads, impairing visibility areas, and/or causing a general nuisance to the public. If properly managed, most negative effects of prescribed fire smoke can be minimized or eliminated.

Prescribed burns are conducted within the limits of a Burn Plan which describes prescription parameters so that acceptable and desired effects are obtained. Smoke produced from prescribed burning is the major air pollutant of concern.

In compliance with the Oregon Smoke Management Plan, prescribed burning activities on the Medford District require pre-burn registration of all prescribed burn locations with the Oregon State Forecaster. Registration includes specific location, size of burn, topographic and fuel characteristics. Advisories or restrictions are received from the Forecaster on a daily basis concerning smoke management and air quality conditions.

E. Road Related Sediment

Currently, there are approximately 163 miles of all road types (4.5mile/sq. mile) in this portion of the watershed. Of these, approximately 34 miles (21 %) are under BLM control. Most of the remaining roads are from private timber company lands, Corp of Engineer lands, county roads, and private land owners. Following is the breakdown of roads by surface types for all roads:

<u>Road Surface Type</u>	<u>Miles</u>
Natural Surface	
Aggregate Base Course (ABC)	22
Aggregate Surface Course (ASC)	11
Bituminous (oil and rock surface)	23
Hard surface concrete (typically private driveways)	4
Pit Run (Grid Rolled)	
Not Known	

*these are typically jeep trails, fire lines and approximately 25 miles are hiking trails

Many of these roads were previously closed or had little traffic but were opened up during the suppression effort of the Timbered Rock wildfire in the adjacent Elk Creek watershed in the summer of 2002. As a result, many of these high gradient access roads have not been re-blocked and winter traffic has destroyed much of the designed road drainage (i.e. water bars, water dips and culverts). This has caused damage to the road surfaces creating road related erosion (rills, gullies) and subsequent sedimentation of the nearby stream channel.

Road crossings on stream channels also pose a risk to increased sediment delivery if the crossing structure (e.g. culverts) are not adequately sized or installed. Inventories have been done to identify and prioritize where future projects can be implanted to reduce this risk on BLM controlled roads.

2

These road related issues are the dominant factor in determining the future condition of the streams and aquatic habitat in this portion of the watershed. It should also be reiterated that the BLM manages a small amount of road miles (21%) and can only effect change in a small part of what will be needed to meet the objective of moving sediment levels toward more reduced and less impactful levels. Co-operation with all land owners will ultimately need to be in place for these landscape objectives to be met.

CHAPTER IV ENVIRONMENTAL CONSEQUENCES

A. Introduction

This chapter is organized by issue to describe the anticipated environmental impacts of the alternatives on the affected environment. It provides the basis for comparing the alternatives presented in Chapter II. The detail and depth of impact analysis is generally limited to that which is necessary to determine if significant environmental impacts are anticipated.

B. Effects From Implementing Alternative 1 (No Action)

Forest Condition -- Dense and Declining Forest Stands

a) Direct and Indirect Effects

Stand densities would remain high, resulting in the continued demand and competition for moisture, sunlight, and nutrients. Current tree densities are resulting in increased competition and declining tree growth. The number of trees per acre is above the biologically sustainable level, in the stands proposed for treatment; the average relative density is 81%. Forest stands with relative densities above 65% have reduced tree vigor, mortality of suppressed trees and a higher susceptibility to insects, disease, and severe fire behavior (Perry 1994, Hann and Wang 1990, Curtis 1982). In the absence of disturbance events such as wildfire or density management, the number of trees per acre will remain at levels that are above the carrying capacity of the site (Oliver, 1996).

Landscape resiliency to disturbance events, including drought, insects, wildfire and climate change would remain low. Continued high stand densities, high surface and ladder fuels, and low tree vigor would tend to magnify rather than buffer the effects of disturbance events (Perry 1995). In the event of a wildfire, greater detrimental effects to soils, wildlife habitat, forest structure and watershed processes would potentially occur, resulting in a longer restoration and landscape recovery period (Brown 2000, USDA 2000).

Without regeneration harvests, forest stands that are deteriorating or have growth rates that are stagnant or declining would not realized their greatest growth potential and would remain at a higher risk to insect attack and tree mortality. Declining tree vigor and growth reduces a tree's ability to resist a variety of damaging agents (Franklin et al 1987). Crown closure would remain above 80%, with a dense multi-layer stand structure. Root disease pockets would continue to enlarge, with susceptible conifer species being infected, in larger trees the volume growth loss caused by root diseases may approach 50% (Thies et al 1995, Hadfield, 1985, Goheen and Otrosina, 1998).

Individual large healthy sugar and ponderosa pine would die at an accelerated rate due to intense competition

from smaller trees, moisture stress, and beetle infestation. The mortality of large pine species would result in the loss of a valuable genetic and structural legacy. Of particular importance, is ponderosa pine which is tolerant of wildfire and drought (Agee 1993, Habeck 1992). The deep root systems of pine species allow these species to access soil moisture deeper in the ground (Wenger 1984, Burns and Honkala 1990). This ability to get to deeper water sources, increases drought tolerance and may also increase the probability of pine species persisting in the event of potential climate change.

b) Short-term Uses vs. Long-term Productivity

In the short-term (5-10 years) the No Action alternative would result in the continuation of the existing forest conditions. Due to dense stand conditions, tree stress increases and weakened trees may lose resistance to insects (ODF 1990, Powell 1999, Filip 1998,). Declining individual tree growth would continue with tree mortality expected to increase. In areas of root disease, the infection of susceptible tree species would continue causing an acceleration of tree mortality and stand decline. The integrity of stands exposed to root pathogens may deteriorate rapidly as susceptible species become infected. The number of snags and the amount of coarse woody debris would increase in these areas, with infected trees dying 5-10 years after crown symptoms appear (Theis and Sturrock 1995). Stand crown closure would progressively decline as mortality occurs.

c) Irreversible or Irrecoverable Commitments of Resources

No irreversible commitments of resources are anticipated. The loss of conifer growth potential, due to growth decline because of high stand densities or root disease, would be an irretrievable loss.

d) Cumulative Effects

An increase risk of insects, diseases, and higher wildfire risk due to high stand densities would be expected. A decline of large conifers and hardwoods within stands would occur as mortality caused by high tree density would result in the loss of individual and groups of large trees.

Fuel Hazard Reduction

a) Direct & Indirect Effects

Under this alternative vegetation conditions would remain unchanged. The resulting trend for vegetation such as dense stand conditions, thick decadent brush, shifts in species dominance and loss of mature seral pine and hardwoods would continue. The project area is currently considered to be in a Condition Class 3 within its

own Fire Regime (please refer to Affected Environment). Continuing this trend will provide for an increase in the development of aerial (ladder) fuels, maintenance of closed canopy conditions and increases in surface fuels and amount of fuel available for consumption in future wildfires. As a result, the project area would remain in a Condition Class 3. Fire hazard will continue to increase. High flame lengths would prevent direct attack.

Impacts to air quality relate directly to the amount of fuel (biomass) available for consumption in future fires. By leaving existing biomass on site, fuel loadings would increase over time.

Particulate matter (PM) is the pollutant of primary concern in smoke from both wildland and prescribed fires. The long-term risk from toxic air pollutants from forest fire smoke is very low. Other pollutants are included in smoke but they are found in much lower concentrations. (Wildfire Smoke, a Guide for Public Officials) Carbon monoxide exposure has been studied extensively by the US Forest Service. These findings show concentrations can be a concern for fireline workers but concentrations dilute readily and drop rapidly as the smoke leaves the fire. (Smoke Exposure at Prescribed Burns) Particulate matter stays suspended in the atmosphere for long periods of time and moves great distances off site. Particles may also act as carriers of toxic substances. Health hazards are related directly to duration and intensity of smoke. Under the No Action Alternative, if a wildfire were to occur, emissions would be similar to those produced by the Timbered Rock Fire. This fire produced 11,975 tons of PM 10 and 10,778 tons of PM 2.5 for a total of 22,754 tons of particulate matter. These totals do not include emissions from other fires. If a wildfire were to occur the emissions would present health concerns to those individuals living downwind in the receptor areas. Under this alternative, no projects would be proposed to reduce fuels, and impacts to air quality from future wildfires would not be reduced.

The above conditions will remain until a disturbance occurs.

b) Short Term Uses vs Long-term Productivity

If no action were taken then the fuel loadings, ladder fuels and stand densities in the area are expected to increase. As a result, the potential for large destructive fire would increase until some action occurs to change existing stand dynamics. If this pattern were to continue, the encroachment of the shade tolerant species into lower elevations will continue and the shade intolerant species will die out until there has been a shift in the dominate species. The oak/pine savannahs and meadows would be lost, transforming the savanna into a woodland by increasing the density of shrubs and tree species. The community diversity that is found in the project area would be lost.

The chance of large scale fires happening in this area increases over time as the species communities change and stand densities increase. If a large fire does ignite in or near the project area it would have detrimental

impacts to long term stand and site productivity. The flame lengths off the fire would be too great to safely attack from the ground. This would also affect the chance and success to defend the WUI.

c) Irreversible or Irretrievable commitment of resources.

None Anticipated

d) Cumulative Effects

Based on the cumulative trend for all vegetative communities, the long term prognosis is for an increase potential for large destructive fires that produce high smoke emissions. When weather conditions are favorable for multiple large fires in adjacent watersheds, such as occurred in 1987 and 2002 this alternative would do nothing to lessen those impacts. Health hazards are a function of total fire emissions, this alternative would have no impact on future emissions. At the landscape level, the increase potential for large wildfires would have long term effects on existing plant communities, wildlife, as well as public and fire fighters safety and the WUI.

Road Related Sediment

a) Direct and Indirect Effects

There would be no direct effect of implementing the no action alternative. Indirectly, roads that are currently actively eroding and proposed for improvement would continue to be at risk for sediment delivery into nearby stream channels.

b) Short Term Uses vs. Long Term Productivity

None Anticipated

c) Irreversible or Irretrievable Commitment of Resources

Soil material lost from the actively eroding roads that are not improved would be irreversible.

d) Cumulative Effects

Same as indirect effects above. This would not help move the landscape objective of reducing road related

sediments toward more reduced and less impactful levels.

C. Effects of Implementing Alternative 2

Forest Condition -- Dense and Declining Forest Stands

a) Direct and Indirect Effects

In stands identified for density management, smaller and less vigorous trees would be harvested, accelerating the development of larger diameter and taller trees so that the characteristics of a mature stand are developed faster (Bennett and Maguire 1995, Duncan 2002, Emmingham and Elwood 2002). Maintaining larger trees with fuller crowns would provide sufficient tree canopies to reduce vegetative competition from brush and hardwoods. Stand vigor and individual tree size would be increased with density levels at full site occupancy.

In selectively cut stands, the number of trees would be reduced towards the carrying capacity of the site. Full site occupancy would be maintained with tree vigor and growth increased. Stand structure would be multi-layered, with high stand heterogeneity and a low effect on edge and fragmentation (McComb and Hansen 1992). Canopy closure in density management and selective cut stands would be decreased from 80-100 percent to approximately 50-60 percent.

In both, the density management and selectively harvested stands, the number of trees per acre would be reduced towards levels that the site has water and nutrients to sustain. The healthiest large conifers and hardwoods would be maintained by reducing adjacent competing vegetation, insuring that the long term ecological benefits of large trees are present within the landscape for the foreseeable future. Forest canopy connectivity would remain and would continue to provide migration and movement corridors for a variety of plant and animal species. Conifer and hardwood species diversity would be present with drought and fire tolerant species favored for retention. Additionally, the potential for a high intensity wildfire would be reduced as average tree size would increase, total vegetative biomass would decrease and surface fuels would be treated (Graham et al. 1999, Agee 1996, Pollet and Omi 2002).

In stands identified for regeneration harvests, variable levels of healthy large green trees greater than 20 inches diameter at breast height would be left. Canopy closure would be reduced to 10-40 percent, depending on the level of green tree retention. Herbaceous, shrub, and tree species composition would be shifted towards shade intolerant and drought tolerant species. Conifer growth and productivity would increase, particularly in stands affected by root diseases that would be planted with non-susceptible conifer species (Theis and Sturrock 1995). Snags and coarse woody debris would remain to provide habitat for wildlife, invertebrate, microbial and fungal species, as well as providing for important ecological functions such as moisture retention, soil stabilization, and nutrient recycling (Harmon and Hua 1991, Franklin et al. 1987). Surface fuels created during management activities would be treated to minimize wildfire risk.

In all treatments, large healthy sugar and ponderosa pine would be favored by removing competing trees; this would result in a decreased rate of mortality and the conservation of a declining genetic and structural legacy (Latham and Tappeiner, 2002).

b) Short-term Uses vs. Long-term Productivity

In the short-term, the vigor of trees in thinned and selectively cut stands would be increased. Long-term productivity would be expected to increase due to increased tree vigor and species diversity being maintained or increased. An increase in tree growth would be expected once the root systems of the residual trees expand (approximately 5-10 years) and are able to utilize the moisture, nutrients and additional growing space. Tree crowns would increase in size and photosynthetic area, with stand crown

closure increasing approximately 10% every five years (based upon Organon growth and yield projections) until full canopy closure is reached. Carbon uptake, pollen production and the production of viable seeds would also increase as tree vigor increases (DOE 1999, Kramer and Kozlowski 1979).

In the regeneration harvests, retained overstory trees and down logs would provide for structural and biological legacies (Franklin 1992, Hansen et al 1991, Hunter 1995). The species mix and density level of planted trees would trend towards the plant communities and stocking levels that historically would have been present. Late-successional characteristics would be expected to redevelop in approximately 80 years.

c) Irreversible or Irretrievable Commitments of Resources

No irreversible commitments of resources are anticipated. Irretrievable commitments of resources would be the loss of large diameter trees, multiple canopy layers and the loss of canopy closure in stands designated for a northern general forest management regeneration harvest for a period of approximately 60-80 years.

d) Cumulative Effects

Treatment under this alternative would result in stands which are more vigorous, healthy, and resilient to environmental changes. Individual tree growth and health would increase. Forest stand susceptibility to insect attack, disease infection, and fire would be expected to be reduced (Oliver et al 1996). Species composition would shift towards the most drought and fire tolerant species.

Fuel Hazard Reduction

a) Direct & Indirect Effects

Under this alternative approximately 2625 acres of treatment would occur across a variety of vegetation types using various methods that include slashing/handpile/ handpile burn, slashbuster and underburning. These treatments would have a direct and indirect effect to existing fuels and associated fire hazard found in the project area.

In all vegetative communities targeted for understory thinning, treatments would reduce current high or very high fuel hazard conditions. These treatments include: slash/hand pile/ handpile burn for 1515 acres, and 284 acres of slashbuster. The removal of trees with a diameter at breast height (DBH) of 6" will occur in the understory and overstory. Spacing will normally range from 14'X14' to 45'X45' maintaining a 60%-70% canopy closure. A direct effect of reducing the understory will eliminate the ladder fuels and reduce the continuous fuel loadings over the project area that lead to high fire intensities. Indirect effects of these treatments will reduce the potential of crown fire initiation and continuity since a stand with a canopy closure of 70% or greater will maintain a crown fire (Rothermel 1991).

In areas dominated by oak/pine savannahs/woodlands, brush fields and grasslands, hardwoods with a DBH of 6" or less and brush species, including wedgeleaf ceanothus (*Ceanothus cuneatus*) and manzanita (*Arctostaphylos viscida*), will be targeted for thinning. Brush species and small diameter trees make up 90%-100% of the understory and fuel continuity of these vegetative communities. In these areas, 50%-60% of the brush and trees species will be retained to a spacing ranging from 15'X15' to 45'X45', in a mosaic pattern across the unit. A direct effect of the treatments to these vegetative communities will be breaking up fuel continuity in the understory and brush fields. Indirect effects of these treatments include a reduction of fire intensities if a wildfire were to occur, allowing safe implementation of fire suppression tactics.

Approximately 529 acres are found in riparian reserves. The riparian reserves will be treated using

slashing/ handpile/ handpile and underburning. As stated in the Affected Environment there is little or no change in vegetation structure and density inside the riparian reserve as compared to the rest of the project area. Treatments in the riparian reserves will be the same as those in the understory thinning treatments. Small- sized non-commercial conifer saplings and poles, hardwoods (7" dbh) and brush species would be targeted for thinning. Within the riparian reserves, approximately 70% canopy closure would be maintained. A direct effect of reducing the understory will eliminate the ladder fuels and reduce the continuous fuel loadings. Indirect effects of these treatments include decreasing the chance of these areas acting as chimneys to funnel fire upslope during large fires. Treatments will also increase natural fire breaks where fire fighters can safely implement suppression tactics.

297 acres are targeted for understory burning in all vegetative communities. In these areas fuel loadings are at levels where a prescribed burn can safely be implemented, re-introducing fire back into a fire dependent ecosystem.

In timber sale units, treatments would reduce canopy fuels through density management and selectively cut stands, increasing and decreasing fire hazard simultaneously. After thinning and prior to slash treatment, there is a period of increased fire hazard as untreated thinning debris makes additional fuel available to wildfire. The hazard would be treated via mechanical, hand piling, lop and scattering, and underburning.

Reducing understory density will lower the Condition Class of the project area within its fire regime, bringing the project area closer to historic fuel loadings. Reducing ladder and surface fuels, canopy closure, understory density and breaking up continuous brush fields, will allow for a cool underburn, if a fire enters the area. Reduction of the fuel loads would reduce the amount of material consumed lessening the smoke emissions produced from wildfire.

Southwest Oregon has a long history of air quality problems. The weather pattern is dominated by the Pacific high pressure. This pattern often creates inversions during the summer and late winter months. The inversions often prompt air stagnation advisories. Air stagnation will trap pollutants at the lower elevations for extended periods of time. The topography of the valley contributes to this problem. The valley sets in a bowl creating the need for a moderately intense storm to break the inversion and to mix air layers. Summer wind patterns are generally from the North or Northwest. During the spring and fall winds tend to come from the South or the Southwest. During these periods the atmosphere is generally unstable which creates good atmospheric mixing and transport to move pollutants off site. Spring and fall are the seasons that prescribed fires are conducted. All prescribed burning is conducted under the Oregon Smoke Management Plan. Dispersion, dilution and avoidance are the techniques that are used to minimize smoke impacts on local communities and direct smoke away from designated areas.

Particulate matter is a major health concern. Grants Pass and Klamath Falls are designated by the Environmental Protection Agency (EPA) as non-attainment areas for particulate matter (PM10). Medford has been designated for PM 10 non-attainment but has gone three years with no violations. Medford's status is currently being reviewed for change to an Air Quality Maintenance Area. The EPA has set health standards for PM 10 and PM 2.5 for both 24 hr. (daily) standards and annual standards. The PM 2.5 standards are based on a three year average. The sampling began in 2000 and was completed in 2002. Once this data is compiled those sites found to exceed standards will be designated as non-compliance sites. In addition to the legally mandated sites the fires impacted a large number of rural residences and smaller communities which have no official designation. Tests indicate that, on average, 90 percent of all smoke particles from wildland and prescribed fires are PM 10 and 70 percent of those are PM 2.5. The data on smoke is collected by DEQ and then analyzed at a later date.

A nephelometer is an instrument that measures air pollution from smoke. It does this by measuring aerosol light scattering from particulate matter. The key sites for this area of concern are located in Grants Pass, Klamath Falls, Crater Lake, and Shady Cove. These instruments are sited and set up according to Oregon Department of Environmental Quality (DEQ) standards. Particulate matter is a byproduct of the combustion

process.

The greatest potential for impacts from smoke intrusions is from underburning. These impacts would be located to localized drainages within and adjacent to the project area. Underburning requires a low intensity burn that may not have the energy to lift the smoke away from the project site. Smoke retained on site could be transported into portions of the nonattainment areas if it is not dispersed and diluted by anticipated weather conditions. Localized concentration of smoke in rural areas away from nonattainment areas may continue to occur during prescribed burning operations.

In order to ensure there will be no impact on air quality of the airshed, burning will only be done when there are favorable weather conditions that encourage an unstable atmosphere. Other factors include, a high moisture content of the duff and dead woody fuels and favorable conditions within the airshed. These conditions are based on atmospheric stability, which affect smoke transportation, dispersion of smoke, and air quality in designated areas and other areas sensitive to smoke. Communication with smoke management forecasters and following smoke management instructions issued daily will help to determine if burning can be accomplished.

Under this alternative, prescribed burning would comply with the guidelines established by the Oregon Smoke Management Plan (OSMP). Prescribed burning under this alternative is not expected to effect visibility within the designated areas or other areas sensitive to smoke.

With the treatment of the understory, fire intensities and flame lengths will be reduced to levels where fire fighters can safely attack or control fires. Although a reduction in the understory will occur the Rate of Spread (ROS) will remain at a high level. Without the dense understory, ladder fuels and high flame length components, the high ROS will not interfere with fire fighters ability to contain a fire.

b) Short Term Uses vs Long-Term Productivity

In the short term, fire hazard would be increased due to the curing of the debris created from treatments. Within the year the cured debris will be burned either via piles or underburning, reducing the hazard. The Condition Class of the project area would be lowered, bringing it closer to historic fuel loading levels. In order to maintain the project area as Condition Class 1 and continue to reduce fire hazard, re-entry into the project area will need to be maintained.

The potential for large scale fires would decrease resulting in the reduced risk of losing long term site productivity and other resource values. The decrease in fire intensities will also increase fire fighter and public safety, allowing fire fighters to safely attack the fire and maintain a defensible space within the WUI.

c) Irreversible or Irretrievable commitment of resources.

None anticipated

d) Cumulative Effects

Treatments would result in a change in Condition Class. Over the project area, 55% is consider Condition Class 3, while 30% is consider in a Condition Class 2. There is only 15% that is considered to be a Condition Class 1, (refer to Purpose and Need). Through treatments, the condition classes across the project area would be lowered, increasing the percentage of the project area having a Condition Class 1 rating where the vegetative communities are within their historical fuel loadings.

With a change in Condition Class, there will be a shift in fuel models over the project area. Fuel models 4

and 6 which have a high expected fire intensity level would be altered to a condition where low to moderate fire intensities would be expected, similar to those found in fuel models 2,8, 9. Smoke emission from wildfires that occur in the project area, will be lower by reducing the total amount of material that can be consumed. Although fire risk will still remain high, due to the recreation and WUI within the project area, the fire hazard will be dramatically reduced.

Shifting of the Condition Class and Fuel Models will decrease flame length and fire behavior. The rate of spread will still be high, yet with the decrease in fire intensities. Fire fighters will be able to safely attack the fire and maintain a defensible space within the WUI. These lower fire intensities will also reduce the risk of large uncontrollable and destructive wildfires.

Specific strategy areas being treated to cumulatively reduce the potential of large fire spread include:

1. Treatment of vegetation adjacent to the Shipley Terrace subdivision off of Lewis Road continuing to private land north of the sub division and to the ridgetop east. Cumulatively, the treatments within these locations would reduce fire spread potential between the WUI and adjacent wildlands, crown fire initiation and providing defensible space for the sub-division, refer to the map in Appendix G.
2. Treatment of oak/pine woodlands and brush fields along Lewis Road and BLM road 32-1E-36. Treatments would reduce the fire spread potential between the road and adjacent WUI lands and adjacent wildlands. In addition, treatments would reduce fire hazard lowering fire intensities allowing fire fighters to safely implement suppression tactics, refer to Appendix G.
3. Treatment of a variety of vegetation types along the Lost Creek Lake Trail and Fire Glenn Recreation Site would reduce the potential of large fire spread from the lakes edge into the uplands to the north and west of the lake. Reducing the fuel hazard will lower fire intensities allowing fire fighters to safely implement suppression tactics, refer to Appendix G.
4. Treatment of a variety of vegetation types along Takelma Drive and BLM road 35-1E- 27 are concentrated along the road and adjacent WUI lands, as well as the lake trail and the Four Corners Recreation Site. Cumulatively, this would contribute towards reducing the potential of fire spread from the road, trail, recreation site, WUI, and the lakes edge into the uplands to the west. In addition, treatments would reduce fire hazard lowering fire intensities allowing fire fighters to safely implement suppression tactics, refer to Appendix G.

Road Related Sediment

a) Direct and Indirect Effects

The direct effect of implementing the road renovations, improvements, and closures would reduce the risk of sediment production on roads proposed for these activities. These actions would stabilize the drainage structures and protect running surfaces from erosion and improve access needs for management activities in the future. Road and landing decommissioning will remove the risk of culverts plugging, increase infiltration into the soil and reduce runoff, and promote re-vegetation of the reclaimed roads. Indirectly in the short term (1-2 years), some increases in erosion and subsequent sedimentation of streams may occur in localized areas of ground disturbance from these proposed activities. This is expected to be short term and minimal until these areas stabilize and re-vegetate.

b) Short Term Uses vs. Long Term Productivity

None Anticipated

c) Irreversible or Irretrievable Commitment of Resources

Same as Alternative 1

d) Cumulative Effects

The proposed road improvements, renovations, closures, and decommissioning would reduce the risk of road related sediments in this project area. These actions are expected to help improve water quality and aquatic habitat particularly in those streams in close proximity to these roads. Although as mentioned earlier in the affected environment section of this document, the total amount of road miles BLM controls (21%) in this project area is relatively small on a landscape scale. Therefore, these actions will only fractionally reduce the sediment levels for this entire watershed area.

D. Effects of Implementing Alternative 3

Forest Condition -- Dense and Declining Forest Stands

a) Direct and Indirect Effects

The direct and indirect effects for forest stands identified for density management and selective cut treatment are the same as Alternative 2.

Forest stands identified for regeneration harvest would have the same direct and indirect effects as Alternative 2, but acres of treatment would decrease from 98 to 18 acres. Subsequently with the reduction of regeneration harvest acres a higher level of canopy closure, forest structure, and connectivity would be maintained across the landscape. Abrupt changes in forest structure caused by harvesting timber would be minimized, providing improved movement and migration corridors for a variety of plant and animal species.

The reduced regeneration harvest acres would be less than the levels prescribed for (based upon stand age) and allowed under the Northwest Forest Plan and the Medford District Resource Management Plan.

Large healthy sugar and ponderosa pine would be favored by removing adjacent competing trees; this would result in a decreased rate of mortality and the conservation of a declining genetic and structural resource.

b) Short-term Uses vs. Long-term Productivity

Same as Alternative 2

c) Irreversible or Irretrievable Commitments of Resources

Same as Alternative 2

d) Cumulative Effects

Same as alternative 2

Fuel Hazard Reduction

a) Direct & Indirect Effects

Under this alternative approximately 2625 acres of treatment would occur across a variety of vegetation types using various methods that include slashing/handpile/ handpile burn, slashbuster and underburning. The treatments would have the same effects as that described for alternative 2.

In timber sale units, treatments would reduce canopy fuels through density management and selectively cut, increasing and decreasing fire hazard simultaneously. After thinning and prior to slash treatment, there is a period of increased fire hazard as untreated thinning debris makes additional fuel available to wildfire. The hazard would be treated via mechanical, hand piling, lop and scattering, and underburning.

b) Short Term Uses vs Long-term Productivity

Like alternative 2, in the short term, fire hazard would be reduced. The Condition Class of the project area would be lowered, bringing it closer to historic fuel loading levels. In order to maintain the project area as Condition Class 1 and continue to reduce fire hazard, re-entry into the project area will need to be maintained.

The potential for large scale fires would decrease resulting in the reduced risk of losing long term site productivity and other resource values found in the project area. The decrease in fire intensities will also increase fire fighter and public safety, allowing fire fighters to safely attack the fire and maintain a defensible space within the WUI.

c) Irreversible or Irretrievable commitment of resources.

None anticipated

d) Cumulative Effects

Cumulatively, treatments would result in a shift in condition class and fuel models. Reducing fuel loadings which will lower smoke emissions from wildfires within the project area. Treatments would also lower fire intensities allowing fire fighters to safely implement suppression actions as described in alternative 2.

Road Related Sediment

a) Direct and Indirect Effects

Same as Alternative 2

b) Short Term Uses vs. Long Term Productivity

Same as Alternative 2

c) Irreversible or Irretrievable Commitment of Resources

Same as Alternative 2

d) Cumulative Effects

Same as Alternative 2

E. Effects of Implementing Alternative 4

Forest Conditions -- Dense and Declining Forest Stands

a) Direct and Indirect Effects

Same as alternative 2.

b) Short-term Uses vs. Long-term Productivity

Same as alternative 2.

c) Irreversible or Irretrievable Commitments of Resources

Same as alternative 2.

d) Cumulative Effects

Same as alternative 2.

Fuel Hazard Reduction

a) Direct & Indirect Effects

Under this alternative approximately 2625 acres of treatment would occur across a variety of vegetation types using various methods that include slashing/handpile/ handpile burn and underburning. The treatments would have the same effects as that described for Alternative 2. The primary difference between the two alternatives is there would be no use of slashbusters.

In timber sale units, treatments would reduce canopy fuels through density management and selectively cut, increasing and decreasing fire hazard simultaneously. After thinning and prior to slash treatment, there is a period of increased fire hazard as untreated thinning debris makes additional fuel available to wildfire. The hazard would be treated via mechanical, hand piling, lop and scattering, and underburning.

b) Short Term Uses vs Long Term Productivity

Like Alternative 2, in the short term fire hazard would be reduced. The Condition Class of the project area would be lowered, bringing it closer to historic fuel loading levels. In order to maintain the project area as Condition Class 1 and to continue to reduce fire hazard, re-entry into the project area will need to be maintained.

The potential for large scale fires would decrease resulting in the reduced risk of losing long term site productivity and other resource values found in the project area. The decrease in fire intensities will also

increase fire fighter and public safety, allowing fire fighters to safely attack the fire and maintain a defensible space within the WUI.

c) Irreversible or Irretrievable commitment of resources.

None anticipated

d) Cumulative Effects

Cumulatively, treatments would result in a shift in condition class and fuel models. Reducing fuel loadings which will lower smoke emissions from wildfires within the project area. Treatments would also lower fire intensities allowing fire fighters to safely implement suppression actions as described in Alternative 2.

Road Related Sediment

a) Direct and Indirect Effects

Same as Alternative 2

b) Short Term Uses vs. Long Term Productivity

Same as Alternative 2

c) Irreversible or Irretrievable Commitment of Resources

Same as Alternative 2

d) Cumulative Effects

Same as Alternative 2

F. Effects of Implementing Alternative 5

Forest Condition -- Dense and Declining Forest Stands

a) Direct and Indirect Effects

Same as Alternative 3.

b) Short-term Uses vs. Long-term Productivity

Same as Alternative 3.

c) Irreversible or Irretrievable Commitments of Resources

Same as alternative 3.

d) Cumulative Effects

Same as alternative 3.

Fuel Hazard Reduction

a) Direct & Indirect Effects

Under this alternative approximately 2625 acres of treatment would occur across a variety of vegetation types using various methods that include slashing/handpile/ handpile burn and underburning. The treatments would have the same direct and indirect effects as described for Alternative 2. The primary difference between Alternative 2 and 3 is there would be no use of slashbusters.

In timber sale units, treatments would reduce canopy fuels through density management and selectively cut, increasing and decreasing fire hazard simultaneously. After thinning and prior to slash treatment, there is a period of increased fire hazard as untreated thinning debris makes additional fuel available to wildfire. The hazard would be treated via mechanical, hand piling, lop and scattering, and underburning.

b) Short Term Uses vs Long-term Productivity

Like Alternative 2, in the short term fire hazard would be reduced. The Condition Class of the project area would be lowered, bringing it closer to historic fuel loading levels. In order to maintain the project area as Condition Class 1 and to continue to reduce fire hazard, re-entry into the project area will need to be maintained.

The potential for large scale fires would decrease resulting in the reduced risk of losing long term site productivity and other resource values found in the project area. The decrease in fire intensities will also increase fire fighter and public safety, allowing fire fighters to safely attack the fire and maintain a defensible space within the WUI.

c) Irreversible or Irrecoverable commitment of resources.

None anticipated

d) Cumulative Effects

Cumulatively, treatments would result in a shift in condition class and fuel models. Reducing fuel loadings which will lower smoke emissions from wildfires within the project area. Treatments would also lower fire intensities allowing fire fighters to safely implement suppression actions as described in Alternative 2.

Road Related Sediment

a) Direct and Indirect Effects

Same as Alternative 2

b) Short Term Uses vs. Long Term Productivity

Same as Alternative 2

c) Irreversible or Irretrievable Commitment of Resources

Same as Alternative 2

d) Cumulative Effects

Same as Alternative 2

V. List of Preparers

NAME / JOB TITLE	RESPONSIBILITIES
John Osmanski, Forester	Silvicultural Prescription Writer
Robin Snider, Wildlife Biologist	Threatened & Endangered Animals
Gene Shull, Fisheries Biologist	Fisheries/ Aquatic Ecosystems
Dusty Pence, Fuels Specialist	Fuels/Air Quality
Marcia Wineteer, Botanist	Plants
Ken Van Etten, Soil Scientist	Soils, Water
Doug Kendig, Riparian Reserve Coordinator	Riparian
Diane Parry, Geologist	Cultural Resources
John McNeel, Engineer	Engineering
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Appendix A Cultural Resources

The State Historic Preservation Organization (SHPO) standards stipulate that 100% of the high probability lands, 20% of the medium probability lands and 5 % of the low probability lands within the project lands must be surveyed. Also a minimum of 20% of the total project area is required to be surveyed. These standards were met or exceeded for this project through three different surveys.

In accordance with the National Historic Preservation Act of 1966 Section 106, an archaeological reconnaissance was conducted for the Lost Creek project area. Seven sites were found and recorded in the project area. There are seven previously recorded sites in the project area. The following write up is taken from the Lost Creek Watershed Analysis, 1998, Flounce Around Project Cultural Report, 2003, and the BF97-35 report (1997).

Prior to Euro-American settlement in the 19th century, the upper Rogue River drainage was likely a boundary area between the Takelma people of the Rogue River Valley and the Molala who inhabited parts of the Cascade Mountains from Mt. Hood to the upper Rogue River.

Archeological surveys in the Lost Creek area suggest a long history of human use. Beginning about 10,000 years ago (Paleo-Indian period), people migrated into the Rogue Valley. It is presumed that these people lived in small mobile groups and were big game hunters. People used the Lost Creek area sporadically until about 5,000 years ago (Archaic period), after which use of the area increased. During this time collector-village subsistence and settlement patterns are noted in the region including the first appearance of pithouses and the use of the mortar and pestle. By about 1,500 to 1,000 years ago (Archaic period), small permanent villages existed in the Lost Creek area. This is the time period during which the bow and arrow, and associated small projectile points were introduced. From 1,000 years ago to contact (Formative and Protohistoric period) the Takelma had a settlement pattern closely related to their subsistence regime. The permanent winter villages were located in the low elevation river valleys of the region in close proximity to the predictable and significant food resources. During the warmer months of the year the Takelma would temporarily move to their seasonal base camps in the surrounding uplands to hunt, gather crops, and to procure other resources not available near their winter villages.

The staple vegetal foods of the Takelma were acorns and camas. A variety of root crops, manzanita berries, pine nuts, tarweed seeds, wild plums, and sunflowers augmented their diet. Anadromous fish (especially salmon), deer and elk, as well as a variety of small mammals and certain insects provided protein in the Takelma diet.

The ethnographic record for the interior southwestern Oregon is limited due to the rapid destruction of the Native American cultures in the region as a result of the "Rogue Indian Wars" of the 1850s. With the discovery of gold in northeastern Oregon, prospectors from the Rogue Valley created a route over the Cascades to the gold fields of the John Day River. Roads to the Klamath Basin that branched off the road to John Day include the Jacksonville to Ft. Klamath Military Road. Beginning in 1862 with the Homestead Act and ending in 1915 many acres of land were transferred out of federal ownership into the private sector.

There should be no direct environmental consequences to cultural resources, because all sites will be buffered and protected. With the exception of one designated crossing of the Historic Military road in 33 S. R. 2 E., sections 8 and 9. Indirect consequences of the increased activity

in the project area could lead the possibility of further looting of some of the sites.

Appendix B Botany

Special Status plants include Federally Proposed, Threatened, and Endangered (T&E); State Proposed, Threatened, and Endangered; and Bureau Sensitive (BSO), Assessment (BAO), Tracking (BTO), and Watch (MW). Vascular plants, lichens, bryophytes, and fungi are included in some or all of these categories. The Bureau of Land Management's policy (BLM Manual 6840.02) is to:

- 1) conserve T&E species and the ecosystems on which they depend,
- 2) ensure that actions authorized on BLM-administered lands do not contribute to the need to list any Special Status species under the provisions of the Endangered Species Act.

Survey and Manage (S&M) species, which include vascular plants, lichens, bryophytes, and fungi, are those identified under the Northwest Forest Plan that are closely associated with late-successional or old growth forests. They are species whose long-term persistence may be of concern and which may require mitigation measures to reduce the impacts of land management efforts. S&M species fall into one of six categories (A-F), which are based on rarity and practicality of conducting surveys.

Requirements for conducting pre-disturbance surveys and protecting sites differ by category (Table 1).

Table 1. SURVEY AND PROTECTION GUIDELINES FOR SPECIAL STATUS PLANTS		
Status	Pre-Disturbance Surveys	Protection
Federal T&E	Yes	Yes
State T&E	Yes	Yes
BSO	Yes	Yes
BAO	Yes	Yes
BTO, MW	Optional	Discretionary
S&M A, C	Yes	Yes
S&M B, D, E	No	Yes
S&M F	No	Discretionary

188 vascular plants, 19 lichens, 1 liverwort, 21 bryophytes, and 49 fungi are included on the Medford Special Status plant list (including S&M species) as known to occur or suspected of occurring on the District. Special Status species documented to date in the Butte Falls Resource Area include 47 vascular plants, 9 lichens, 8 bryophytes, and 14 fungi.

Habitat

The proposed project area is located in the Lost Creek Watershed, on the western slopes of the Cascade Range. Most units are located on the north and west sides of Lost Creek Lake, with a few units on the southwest side of the lake. Elevation ranges from approximately 1,600 feet to 4,000 feet. Vegetation consists of a mosaic of plant communities, including conifer stands, mixed hardwood-conifer woodlands, oak woodlands, chaparral patches, open meadows, and

rocky scablands. Special habitats include rock outcrops and cliffs, riparian corridors, wet meadows, and seeps. The project area contains suitable habitat for many Special Status and Survey and Manage vascular plants, lichens and bryophytes, although past surveys discovered few species or sites (Lost Creek Watershed Analysis, p. 24).

Surveys

Vascular and non-vascular (lichen and bryophyte) plant surveys were conducted on approximately 800 acres of proposed timber sale units and 3,382 acres of proposed fuels treatment units in the Flounce Around project area in 1999, 2000, 2002, and 2003.

Surveys were conducted by professional botanists using intuitively controlled transect methodology, according to survey protocols for S&M species. Surveys were focused on locating Threatened and Endangered, Bureau Sensitive, Bureau Assessment, and Survey and Manage category A and C species likely to occur in the project area, although incidental sightings of Bureau Tracking, Medford Watch, and S&M category B, D, E and F species were also documented. Comprehensive species lists of vascular plants, lichens, and bryophytes were compiled for each section surveyed. Locations and extent of noxious weed populations were also documented during vascular plant surveys. These sites will be added to the Medford District noxious weed database.

Surveys for Special Status and S&M fungi were not required because they are in categories for which pre-disturbance surveys are not required. Only one S&M fungi, *Bridgeoporus nobilissimus*, is a category A species which requires pre-disturbance surveys for projects within its range and containing suitable habitat. *Bridgeoporus nobilissimus* has not been found south of the Salem District BLM. It is a conk that is found in mesic to wet microsites on snags, stumps, or dead portions of large, live Pacific silver fir and noble fir (Hibler 1998, p 3-5). The Flounce Around project area is outside the range and does not contain suitable habitat for this species. When Special Status or S&M fungi are discovered during other plant surveys, they are protected according to management directions.

Threatened and Endangered (T&E) Plants

Three Endangered plants occur in the Butte Falls Resource Area - *Fritillaria gentneri*, *Limnanthes floccosa* ssp. *grandiflora* and *Lomatium cookii*. The Flounce Around project area is located outside the ranges of all three species. However, even though the project area is outside their ranges, surveys conducted for other Special Status plants during the appropriate survey season would have detected and documented the endangered plants, if they were present in the project area. No sites of these three T&E species were discovered during surveys in the project area.

Special Status and Survey and Manage Plants

Surveys conducted in the Flounce Around project area discovered 19 Special Status and 3 Survey and Manage plants (Table 2).

Four lichens which previously had S & M status – *Bryoria tortuosa*, *Dendriscoaulon intricatum*, *Calicium gloucellum*, and *Calicium viride* – were also discovered in the Flounce Around project area. These species were removed from the S&M list in the 2002 Annual

Species Review (USDA and USDI 2003). The sites were flagged and documented during surveys conducted in 2002 and early 2003, but would not be protected in the proposed project because they were removed from the list prior to completion of the EA and signing of the Record of Decision.

Table 2. Special Status and S&M Plants Documented in the Flounce Around Project Area				
Scientific Name	Common Name	Lifeform	Status	Number of Sites
<i>Carex livida</i>	livid or pale sedge	Vascular plant	Assessment	1
<i>Carex serratodens</i>	Saw-tooth sedge	Vascular plant	Assessment	5
<i>Cirsium ciliolatum</i>	Ashland thistle	Vascular plant	Sensitive	2
<i>Crumia latifolia</i>		Bryophyte	Assessment	1
<i>Cyripedium montanum</i>	mountain lady's-slipper	Vascular plant	Tracking, S&M C	2
<i>Fabronia pusilla</i>		Bryophyte	Tracking	13
<i>Funaria muhlenbergii</i>		Bryophyte	Assessment	8
<i>Hedwigia detonsa</i>		Bryophyte	Watch	2
<i>Leptogium cyanescens</i>		Lichen	S&M A	1
<i>Lewisia cotyledon</i> var <i>howellii</i>	Howell's lewisia	Vascular plant	Tracking	2
<i>Limnanthes floccosa</i> ssp <i>bellingermana</i>	Bellinger's meadowfoam	Vascular plant	Sensitive	2
<i>Lithophragma heterophyllum</i>	hillside woodland star	Vascular plant	Tracking	5
<i>Navarretia heterandra</i> **	Tehama pincushion plant	Vascular plant	Assessment	1
<i>Pannaria saubinettii</i> **		Lichen	S&M F	2
<i>Perideridia howellii</i>	Howell's yampah	Vascular plant	Tracking	7
<i>Plagiobothrys glyptocarpus</i>	sculptured popcorn flower	Vascular plant	Assessment	2
<i>Plectania milleri</i> +		Fungi	Tracking	3
<i>Ribes inerme</i> var <i>klamathense</i>	Klamath gooseberry	Vascular plant	Tracking	1
<i>Scribneria bolanderi</i>	Scribner's grass	Vascular plant	Tracking	24
<i>Tortula subulata</i>	awl-leaved tortula moss	Bryophyte	Tracking	28
<i>Tripterocladium leucocladulum</i>		Bryophyte	Assessment	1
**Pending verification; + unverified sites				

Species Descriptions

Carex livida (livid or pale sedge) – 18 previously documented sites in the Medford District. The range includes disjunct populations in Pacific States and eastern U.S. Typical habitat in the Cascades is in wet meadows on volcanic substrates. The site in Flounce Around is located outside a proposed unit.

Carex serratodens (saw-tooth sedge) – 18 previously documented sites in the Medford District. Endemic to southwestern Oregon and the Sierra Nevada and Coast Ranges of California. Typical habitat is in moist meadows and rocky places near streams and seepages. All sites in Flounce Around located in hand treatment fuels reduction units.

Cirsium ciliolatum (Ashland thistle) – 21 documented sites in the Medford District. Endemic to the Klamath Mountains in northern California and southern Oregon. First documented in the Butte Falls Resource Area in 2002. Occurs in open woodlands. Two sites documented in Flounce Around, both in hand treatment fuels reduction units in Oregon white oak woodlands.

Crumia latifolia – 74 sites of this bryophyte previously documented in the Medford District. Endemic to the western U.S. and South Dakota. Typical habitat is on rocks in perennial or intermittent streams. The site in Flounce Around is in a stream in an open meadow, at the edge of a hand treatment fuels reduction unit.

Cypripedium montanum (mountain lady slipper) – 149 sites documented in the Medford District. Has both Bureau Tracking and S&M status. Endemic to western North America where it is widely distributed, but most populations contain less than ten plants. Autotrophic orchid that occurs in a broad range of habitats and soil substrates (including ultramafic) between 1,500 and 6,500 feet elevation, but usually from 2,500-4,000. Habitats include mostly northerly aspects with mixed conifer or evergreen/oak woodlands, often with 60-80% canopy closure. Two sites documented in Flounce Around, one in a unit that was dropped and one in a hand treatment fuels reduction unit.

Fabronia pusilla – 10 sites documented in the Medford District. Range includes British Columbia, Washington, Oregon, Idaho, California, Arizona, and Colorado. Typical habitat in the Butte Falls Resource Area is rock outcrops in xeric, harsh sites of Oregon oak woodlands, meadows, and chaparral. Thirteen sites found in Flounce Around, all in hand treatment fuels treatment units, except one site in a unit that would be slashbusted under Alternatives 2 and 3.

Funaria muhlenbergii – 11 sites previously documented in the Medford District. Range includes Washington, Oregon, California, Arizona, and Utah. Typical habitat in the Butte Falls Resource Area is on soil in rocky, xeric sites in ceanothus brushfields, meadows, and oak woodlands. Populations consist of few individuals and are generally shaded by rock outcrops. Eight sites documented in Flounce Around – seven in hand treatment units and one in a fuels treatment unit that was dropped.

Hedwigia detonsa – 3 sites of this bryophyte previously documented in the Medford District. Only recently documented in Oregon on the Medford District, more common in California. Grows on rock. Two sites documented in Flounce Around, both found on

rocks in rocky meadows next to the forest edge. One unit is proposed for hand treatment and one is proposed for density management.

Leptogium cyanescens - The site in Flounce Around is the only documented site in the Medford District. The range of this lichen is all Physiographic Provinces in the Northwest Forest Plan area with the exception of the California Cascades and Eastern Oregon and Washington Cascades. It occurs on bark or rotten logs or hardwood trees, or on rocks in mixed conifer and Douglas-fir stands, and in maple and willow thickets in riparian and upland habitats. It was found in Flounce Around on rock in a density management unit.

Lewisia cotyledon var. *howellii* (Howell's lewisii) – 65 sites previously documented in the Medford District. Endemic to southwestern Oregon and Shasta County in northern California; rare throughout its range. Typical habitat is on rock outcrops or canyon walls near oak woodlands. Two sites documented in Flounce Around on cliff faces in fuels treatment units.

Limnanthes floccosa ssp. *bellingeriana* (Bellinger's meadowfoam) – 28 sites documented in the Medford District. Endemic to Jackson County. Closely related to the Endangered species *Limnanthes floccosa* ssp. *grandiflora*, which occurs only on the Agate Desert. Blooms in April and May in vernal wet areas in rocky meadows with shallow soils. Two sites discovered in Flounce Around, both in hand treatment fuels reduction units.

Lithophragma heterophyllum (hillside woodland star) – 97 sites previously documented in the Medford District. Endemic to California and southwestern Oregon. Typical habitat is in shaded oak woodlands or mixed hardwood-conifer forests. All sites in Flounce Around are in hand treatment fuels reduction units.

Navarretia heterandra (Tehama pincushion plant) – Only recently discovered in the Medford District. Specimens will be sent to a specialist for verification, but are assumed to be correctly identified until verification is received. Both sites in Flounce Around are in hand treatment fuels reduction units.

Pannaria saubinettii – 2 sites previously documented in the Medford District. West coast endemic, common in the western Cascades. Typical habitat is in moist or wet forests, in deep shade to somewhat open sites, low to mid elevations. Grows on bark, wood, or rock. Both Flounce Around sites are in hand treatment fuels reduction units. Specimens have been sent to the S & M lichen taxa expert for verification. This species is difficult to identify and resembles other more common species.

Perideridia howellii (Howell's yampah) – 69 sites previously documented in the Medford District, although many more undocumented sites exist. West coast endemic. Habitat is along streambanks and in wet meadows in open oak woodlands. All sites documented in Flounce Around are along seepy, sometimes intermittent streams in hand treatment fuels reduction unit.

Plagiobothrys glyptocarpus (sculptured popcorn flower) – 27 sites previously documented in the Medford District. Endemic to northwestern California and Jackson County, Oregon. Typical habitat is in moist places in grasslands and woodlands. One site documented in a hand treatment fuels unit that was dropped.

Plectania milleri – Approximately 80 sites previously documented in the Medford District. Was an S&M fungus until it was removed during the 2002 Annual Species Review, but it remains a Tracking species. The known range includes southwestern Oregon, Mount Hood National Forest, and Idaho. It typically grows on duff in late-successional or old-growth forests. Three sites were originally reported in Flounce Around. Two are located within and one outside a density management unit.

Ribes inerme var *klamathense* (Klamath gooseberry) – 18 sites previously documented in the Medford District. Endemic to northwestern California and southwestern Oregon. Typical habitat is in wet meadows at forest edges. The site in Flounce Around is outside the proposed units.

Scribneria bolanderi (Scribner's grass) – 40 sites previously documented in the Medford District, but has been under-reported. Endemic to western U.S. Typical habitat in the Butte Falls Resource Area is on xeric sites with shallow soils and basaltic rock outcrops. Sites in Flounce are in fuels reduction units. Some sites cover several acres, but have scattered individual stems.

Tortula subulata – 222 sites previously documented in the Medford District. Range is west coast of North American from B.C. to California. Habitat is on soil, often in disturbed sites such as upturned root wads, roadsides, and trails. 21 sites were documented in Flounce Around in all types of treatment units.

Tripterocladium leucocladulum - At least 80 sites previously documented in the Medford District. Western North American endemic found on soil, rock, or trees. One site documented in Flounce Around in hand treatment fuels reduction unit.

Protection Measures

Protection measures are implemented to conserve T&E species and populations, ensure that actions authorized, funded or carried out by the BLM do not contribute to the need to list any Sensitive or Assessment plant species (BLM Manual 6840.02), and manage known sites of S&M species in categories A-E. Protection measures for S&M species follow management recommendations, where available. Protection of Bureau Tracking, Medford Watch, and S&M category F species is not required, but is discretionary (Table 1). Species in these categories for which many sites are known and populations across their ranges appear to be stable, are generally not protected. It is assumed that the Reserve System (LSRs, Riparian Reserves, Owl Cores, etc.) provides an adequate level of protection for those species. Species for which few sites are known are generally protected.

Protection measures are developed utilizing existing management recommendations developed by taxa experts and adopted by the BLM and US Forest Service, other reference sources, and professional experience with the species and the resource area. Buffer sizes are determined by considering the proposed treatment, the environmental requirements of the species, and the ecological conditions of the site, including plant community, aspect, slope, and canopy closure.

Protecting plants from direct impacts is the first priority. For some species, maintaining canopy cover and microsite conditions is also important and buffers are established around the plant site. Other species and sites may not be negatively affected by and may even benefit in the long-term from pro-active management during periods of dormancy or senescence, such as fall burning or thinning that would enhance habitat or reduce competition from brush, trees, or other herbaceous species. In these instances, smaller buffers or delaying management activities until plants are dormant would be adequate. Only sites within treatment units would be buffered.

Environmental Impacts

Threatened and Endangered Plants

The proposed projects would have No Effect on *Fritillaria gentneri*, *Lomatium cookii*, or *Limnanthes floccosa* ssp *grandiflora* because no plants occur within the proposed units.

Cumulative Effects Common to All Alternatives

Land ownership in the Lost Creek Watershed is checkerboard and includes private land as well as land managed by the government. Past management activities including logging, road building, agriculture, and recreational and residential development likely affected rare plants and resulted in a loss of suitable habitat within the Flounce Around project area.

Because of these past activities, some mature forests that had structural complexity and species diversity were converted to early seral, single-age stands. In addition to directly impacting Special Status plants, these actions fragmented habitats, isolated populations, and resulted in reduced gene flow and loss of species diversity. The Timbered Rock Fire in the adjacent Elk Creek Watershed and the Wall Creek Fire in the Trail Creek Watershed, which both burned in 2002, also resulted in a loss of some late seral habitat and possibly mortality of Special Status plants.

Although there has been a reduction in late seral conifer stands on BLM-administered land due to past timber harvest and fires, the Northwest Forest Plan and Medford Resource Management Plan provide a reserve system across the landscape that is intended to provide for protection and development of late seral habitat and protection and expansion of Special Status plants.

Plant communities have also been altered over the last 100 years due to fire suppression and changes in fire regimes and ecosystem processes. Fires often burn unequally over a landscape, creating structural complexity that supports biodiversity. As fuels build up, the risk increases of high severity fires, which could result in mortality or damage to rare plants. Special Status plants that require disturbance openings or earlier seral stages, or depend on heat or chemicals that fire generates for seed germination, may have declined or suffered reduced population vigor as a result of fire exclusion.

Noxious weeds have also impacted plant communities in the Lost Creek Watershed, especially more open ones, like oak woodlands and meadows. Non-native plants and noxious weeds compete with native species, resulting in reduced species diversity. Road construction, logging activities, and other disturbances occurring in the future will likely continue to introduce and spread noxious weeds in the watershed. Noxious weeds are treated on BLM-administered land when they are reported.

It is expected that timber harvest, grazing, road building, and other activities will continue in the future on both private and BLM-administered land in the watershed. It is also assumed that Special Status plants that occur in the area would only be protected on BLM-administered land.

Alternative 1 – No Action

Direct, Indirect and Cumulative Effects

Under Alternative 1, none of the proposed activities would be implemented and no direct effects to Special Status or S&M plants would occur. Current trends would continue with more fuels build-up and fire exclusion in plant communities that have historically had frequent, low intensity fires.

Indirect and cumulative effects to habitats and Special Status plants could result from not implementing density management and fuels reduction treatments. A continued build up of fuels could result in more intense and severe fires in the event of wildfire. High severity fires cause more extensive damage to plants than do lower severity fires. Vascular plants, such as *Cypripedium montanum* and *Limnanthes floccosa* ssp. *bellingermaniana*, and lichens and bryophytes, such as *Funaria muhlenbergii*, and *Tripterocladium leucocladulum*, could suffer direct mortality or damage to underground plant parts, seeds, or spores. Recovery of rarer plants from high severity fire could take longer or may not occur, compared with their response to lower severity fire.

Some Special Status plants, such as *Cirsium ciliolatum* are dependent on earlier seral stages or more open conditions. These fire-dependent species could be shaded out by encroaching vegetation in oak woodlands and meadows or may suffer reduced population vigor with continued fire exclusion.

The status of species that occur on rock outcrops, such as *Fabronia pusilla* and *Lewisia cotyledon* var. *howellii*, would not change under the No Action Alternative because habitat conditions would remain the same in the foreseeable future.

Alternative 2

Direct and Indirect Effects

Terrestrial Special Status plants (e.g. *Cypripedium montanum*, *Limnanthes floccosa* ssp. *bellingermaniana*, *Cirsium ciliolatum*, and *Funaria muhlenbergii*) could be directly impacted and adversely affected by ground-based machinery used in timber harvest or fuels reduction activities or from burning handpiles. However, no direct effects from the proposed activities would occur to the Bureau Sensitive, Assessment, or S&M category C plants that occur in the project area because sites that were discovered would be protected with buffers. Some Bureau Tracking species would also be protected by buffers or occur in areas that would not be impacted by the proposed activities.

Species associated with later-successional conditions, such as *Cypripedium montanum*, could be indirectly affected by changes in environmental conditions, such as increased light and temperature and reduced moisture, caused by removing canopy cover during timber harvest or

fuels reduction activities. The *Cypripedium montanum* site is located in a hand treatment fuels unit where mostly understory trees would be thinned. A 100 foot buffer around the site would maintain microsite conditions and protect the plants from direct impacts during treatment.

Under Alternative 2, approximately 100 acres would be regeneration harvested, leaving between 10-40% canopy cover and returning the stands to an early seral condition. There would be no direct impacts to any Special Status or S&M plants because none were discovered in these units. The impact of regeneration harvest would be removal of late seral habitat for potential expansion of late-successional associated species. However, the scale of this loss of late seral habitat is very small in relation to the total acres in the watershed - .004% of the entire watershed and .009% of BLM-administered land in the watershed.

Under Alternative 2, 279 acres would be treated with a slashbuster to reduce fuels. There would be no direct impacts to Special Status or S&M plants because all areas were surveyed and sites would be protected or required slashbuster treatment could potentially create some indirect effects to Special Status plants and native vegetation by displacing soil and creating openings for noxious weed invasion. However, project design features, described under "Noxious Weeds and Fuel Hazard Reduction," would reduce these effects by minimizing ground disturbance, seeding disturbed areas with native grass seed, and monitoring and treating areas for noxious weeds after completion of management activities. The scale of this disturbance is also small at the watershed level - .01% of the entire watershed and .02% of BLM-administered land.

Special Status and S&M species that grow on rocks (e.g. *Fabronia pusilla*, *Hedwigia detonsa*, *Lewisia cotyledon* var *howellii*, and *Tripterocladium leucocladulum*), in the protection of rocks (*Funaria muhlenbergii*), and in riparian areas (*Carex livida*, *Carex serratodens*, *Perideridia howellii* and *Crumia latifolia*) would not be affected by the proposed activities. However, all Bureau Sensitive and Assessment and S&M category C species would be buffered. Buffer sizes would vary, depending on the species, site conditions, and the proposed activities.

Another potential indirect effect of the proposed activities on Special Status vascular plants would be an increase in noxious weeds. Construction of skid roads and landings, increased vehicular traffic in the project area, and movement of equipment in, out, and within timber sale and slashbuster units could result in the introduction or spread of noxious weeds into areas not already occupied. However, project design features, described under "Noxious Weeds" were designed to minimize these possible effects.

Thinning forest and woodlands would provide beneficial indirect effects to some Special Status plants that require more light, such as *Cirsium ciliolatum* and *Limnanthes floccosa* ssp. *bellingermana*. Maintaining more open conditions in oak woodlands and meadows by thinning or prescribed burning would preserve these habitats, contribute to plant diversity, and provide habitat for Special Status plants associated with these plant communities. Reducing fuel loads would also reduce the risk of mortality of Special Status plants from high severity fire that could occur in the event of a wildland fire.

Cumulative Effects

See Cumulative Effects Common to All Alternatives. Alternative 2 includes both regeneration harvest and slashbuster treatment, which both have the potential of causing some indirect effects to Special Status plants. However, project design features would reduce impacts from

the proposed slashbuster treatment by minimizing soil disturbance and spread of noxious weeds. The proposed activities would not contribute to the need to list any Special Status plants or jeopardize the viability of S&M species that occur in the proposed units.

Alternative 3

Direct and Indirect Effects

Direct and indirect effects from Alternative 3 would be the same as those described in Alternative 2, with the exception that no potential indirect effects to Special Status plants would occur as a result of losing approximately 18 acres of late seral habitat during regeneration harvest. There would be no direct effects to Special Status Sensitive, Assessment, or S&M category C plants because all sites that occur in proposed units would be protected.

Cumulative Effects

See Cumulative Effects Common to All Alternatives. Alternative 3 includes slashbuster treatment, but no regeneration harvest. Project design features would reduce impacts from the proposed slashbuster treatment by minimizing soil disturbance and spread of noxious weeds. There would be no loss of late seral habitat during regeneration harvest. The proposed activities would not contribute to the need to list any Special Status plants or jeopardize the viability of S&M species that occur in the proposed units.

Alternative 4

Direct and Indirect Effects

Direct and indirect effects from Alternative 4 would be the same as those described in Alternative 2, with the exception that no potential indirect effects to Special Status plants or native vegetation would occur as a result of slashbuster treatment. There would be no direct effects to Special Status Sensitive, Assessment, or S&M category C plants because all sites that occur in proposed units would be protected.

Cumulative Effects

See Cumulative Effects Common to All Alternatives. Alternative 4 includes regeneration harvest, but no slashbuster treatment. However, the scale and magnitude of losing approximately 100 acres of late seral habitat is small at the watershed level. This alternative would not contribute additional cumulative effects to Special Status plants. The proposed activities would not contribute to the need to list any Special Status plants or jeopardize the viability of S&M species that occur in the proposed units.

Alternative 5

Direct and Indirect Effects

Direct and indirect effects from Alternative 5 would be the same as those described in Alternative 2, with the exception that no potential indirect effects to Special Status plants or

native vegetation would occur as a result of regeneration harvest or slashbuster treatment. There would be no direct effects to Special Status Sensitive, Assessment, or S&M category C plants because all sites that occur in proposed units would be protected.

Cumulative Effects

See Cumulative Effects Common to All Alternatives. The proposed activities would not contribute to the need to list any Special Status plants or jeopardize the viability of S&M species that occur in the proposed units.

REFERENCES CITED

Hibler C. and TE O'Dell. 1998. Survey Protocols for *Bridgeoporus (=Oxyporus) nobilissimus* Fungi, V. 2.0., 8 pp., in USDA Forest Service and USDI Bureau of Land Management. 1998. IM-OR-103, BLM Oregon State Office, Portland OR.

USDA Forest Service and USDI Bureau of Land Management. March 14, 2003. Instruction Memorandum No. OR-2003-050. Implementation of 2002 Survey and Manage Annual Species Review. 17 pp.

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Appendix C Wildlife Report

DESCRIPTION OF THE EXISTING ENVIRONMENT

The proposed projects are within the Lost Creek Watershed. For a more complete description of the existing environment, see the Lost Creek Watershed Analysis (completed 1998). There are several special land designations for wildlife in the Flounce Around Project Area within the Lost Creek Watershed. These include: 3 northern spotted owl (NSO) activity centers within the project area boundary; one late-successional connectivity block (T33S -R1E – Section 1), one “Big Game Winter Range and Elk Management area” north of Lost Creek Reservoir, and approximately 8,000 acres of designated northern spotted owl “critical habitat” in the northwest portion of the project area.

Wildlife Appendix table 2 lists the Special Status wildlife species that may occur within the Butte Falls Resource Area, including Federally listed, State listed, Bureau Sensitive species, and Survey and Manage species.

T&E SPECIES

Bald Eagle

There are two known bald eagle nests near the Lost Creek Reservoir. These nests are considered to be the same site. The original nest site location has been vacant since 1997. The alternate nest has been active since 1998. The active nest is on Army Corps of Engineers land and adjacent to BLM land. No timber sale units are proposed within ½ mile of the nest, and a seasonal restriction on actions within ¼ mile (1/2 mile line of sight) would be in place from January 1 to August 15 for any year nesting occurs.

Bald eagles have been seen on the north end of the reservoir, but no additional nests have been found to date. Individual bald eagles have also been observed in the project area during the winter months.

Northern Spotted Owl

3 northern spotted owl sites within the project area have designated activity centers. The activity centers are 100 acres of the best habitat near the center of activity of each pair or resident single site which was known on January 1, 1994 (ROD, pg 10). Two additional spotted owl sites within the project area were located after January 1, 1994. These sites do not have designated activity centers. However, the nest locations would be buffered and protected from timber harvest. One additional NSO site with a designated activity center is located north of the project area and is within the provincial radius (1.2 miles for the Cascade Province) of a proposed timber sale unit. These sites have been monitored in the past several years by BLM biologists and only 2 were active in 2003. 8,000 acres of designated northern spotted owl “critical habitat” (CHU-34) is located in the northwest portion of the project area.

Connectivity Block

T33S - R01E - Section 1 is a RMP/ROD designated connectivity block. ROD recommendations are to maintain 25-30% of late successional forest in the connectivity block. 305 acres of the best late successional habitat in the section have been deferred from harvest at this time.

SURVEY AND MANAGE

Great Gray Owl

Surveys for great gray owls (GGO) have been completed to current interagency protocol *Survey Protocol for the Great Gray Owl* (April 1995). Two years of great gray owl protocol surveys were completed in 2001. Additional surveys were conducted in the spring of 2002 and 2003. No great gray owls have been detected and no nests have been located in the project area. The closest known GGO nest is approximately 5 miles away from the project area, in the eastern end of the Lost Creek watershed. This site has been vacant for 6 years.

Terrestrial Mollusks

Mollusk surveys were completed in the spring of 2003 using current protocol in effect at the time, *Survey Protocol for Terrestrial Mollusk Species from the Northwest Forest Plan, Versions 2.0 and 3.0*. No survey and manage mollusk species were located in the timber sale units. 22 Oregon Shoulderband, *Helminthoglypta hertleini*, were located in the fuels units prior to the Oregon Shoulderband being removed from the Survey and Manage list as a result of the 2002 Survey and Manage Annual Species Review (March 14, 2003). The current direction is to protect known sites, so these locations would be protected from fuels treatments with a no treatment buffer area. This meets both the current management guidelines, the *Draft Management Recommendations for Helminthoglypta hertleini, the Oregon Shoulderband, Version 2.0* (October 15, 1999) and the *Survey and Manage Management Recommendation Amendments for Fuel Hazard Reduction Treatments Around At-Risk Communities, Group 2* (February 23, 2003).

Red Tree Vole

Red tree vole (RTV) surveys were completed on all proposed timber sale units, as well as timbered stands within fuels treatments according to protocols that were in effect at the time of surveys. The following protocols were used: *Interim Survey Protocol for the Red Tree Vole in Oregon, Version 1.0* (September, 1996); and *Survey Protocol for the Red Tree Vole, Version 2.0* (February, 2000,); and *Version 3.0* (October 2002). Red tree vole surveys were completed in the spring of 2003. A total of 392 trees were climbed in proposed timber sale and fuel treatment units. Tree climbing surveys were conducted to determine the nest status of unknown nests discovered through ground surveys. No red tree voles, red tree vole evidence, or red tree vole nests were located from ground surveys or tree climbing surveys. New boundaries for required RTV surveys were established in the protocol version 2.0. The units east of Lost Creek Reservoir are outside the known or suspected geographic range of the red tree vole, so surveys are not required. However, some of these units were originally surveyed in 1997 for another project using the interim RTV protocol, and no RTV evidence was observed at that time.

SENSITIVE SPECIES

Northern Goshawk

Approximately 550 acres have been surveyed to current interagency protocols within the project area during the past three years. Timber stands that appeared most likely to provide suitable goshawk habitat were surveyed. Two years of surveys were completed in 2002 and additional surveys were done in 2003. Some early surveys were also done in 1997 when the project area was being considered for another sale plan. There are two known northern goshawk nests within the project area. One known nest is located within a northern spotted owl activity center, as well as within a designated connectivity block and would be protected. 305 acres of the best late successional habitat in the designated connectivity block have been deferred from harvest at this time. The second nest was discovered in 2003 and is located in a fuels treatment unit. The nest would be buffered and a seasonal restriction for activities within a ¼ mile of the nest would be in place from March 1 to August 30.

Peregrine Falcon

There are no known peregrine sites within this project area or the Lost Creek Watershed. There are two cliff areas that could provide suitable nesting substrate for peregrines, but no birds have been detected there on annual opportunistic surveys. Birds from a nest site in an adjacent watershed forage within the Lost Creek Watershed.

The peregrine falcon was de-listed by USFW in August, 1999 and is no longer a federally listed species. It is currently recognized as a Bureau Sensitive species.

Other Raptors

Golden Eagle

There is one historic nesting cliff on private land on the north end of the project area. This site was occupied by golden eagles through 1993. These eagles have been absent from 1994 to 2003.

Sharp Shinned Hawk

There is one known sharp shinned hawk nest within the project area. This nest would be buffered with a 10 acre no-entry buffer. A seasonal restriction from March 1 through August 15 would be in place for activities within a ¼ mile of the nests if they are active. This buffer and the adjacent stands would continue to provide nesting, roosting, and foraging habitat for sharp shinned hawks.

Osprey

Approximately 32 nests are located around Lost Creek Reservoir within the project area. Not all nests are monitored each year. Approximately 24 nests have been checked in 2003 and 18 nests are active. 7 nests are located within proposed timber harvest or fuels treatment units. However, no osprey nest trees would be removed by the proposed actions. These nests would

be protected with a 5 acre no harvest buffer. A seasonal restriction would be in effect for activities within a ¼ mile of known osprey nests from March 1 to August 31.

Flammulated Owl

One survey route was conducted within the Lost Creek Watershed in 1995. No flammulated owls were detected, but they could occur in the Lost Creek Watershed. Flammulated owls have been observed in adjacent watersheds within the past 2 years.

OTHER WILDLIFE SPECIES

Cavity Nesters

No inventory data on snag and cavity nester populations has been collected within the project area. In all of the proposed action alternatives, all large snags would be retained which did not need to be felled for human safety reasons. Snags which need to be felled for human safety reasons would be left on site to provide coarse woody debris. The minimum ROD standard requirements would be met. An average of two snags per acre would be left to meet snag requirements. Coarse wood would meet 120 linear feet of logs per acre greater than or equal to 16 inches in diameter and 16 feet long in decay class one and two.

Big Game Animals

Deer, elk, bear, and cougar are present in the Lost Creek Watershed. Approximately 3,580 acres north of Lost Creek Reservoir is designated in the Medford District RMP as "Big Game Winter Range and Elk Management Area." Guidelines in designated winter range are to maintain at least 20% of the thermal cover within the project area. Thermal cover is a forest stand with at least 70% canopy cover, with the average tree height at least 40 ft. 720 acres have been deferred from timber harvest and fuels reduction treatments within this designated "Big Game Winter Range and Elk Management Area." The Medford District RMP management guidelines also include observing a seasonal restriction to avoid disturbance from November 15 to April 1. However, this cannot always be achieved due to high public use of roads in the area, vandalism to gates, and requirements to provide access to adjacent private lands. A portion of the Jackson Access and Travel Management Area (JACTMA) is located within the Lost Creek Watershed. This plan restricts vehicular access to the area north and west of Lost Creek for 7 months of the year to reduce disturbance and poaching pressure.

ODFW and Army Corps of Engineers have improved foraging habitat through several seeding and fertilization projects on adjacent Army Corps of Engineers land. Additional seeding projects have also been done on private meadows.

Neotropical Migratory Land Birds

Neotropical migratory birds are present during spring, summer, and early fall. 3 additional birds on the Fish and Wildlife Service Birds of Conservation Concern list, which are not previously addressed in this appendix, have been observed in the Butte Falls Resource Area and could be present in the Flounce Around Project Area. These species are rufous hummingbird, Lewis' woodpecker, and olive-sided flycatcher. Another bird on the same list, the white-headed woodpecker, has not been recorded in the Butte Falls Resource Area, but could be a transitory visitor.

Bats

No Townsend's big-eared bats have been recorded in the project area; however, they could be present. No known caves, mines, abandoned wooden bridges are within any proposed timber sale unit. Snags and large hollow oaks would be left in the proposed units to provide roosting habitat.

SPECIAL HABITATS

Oak Woodlands/ Shrublands/ Meadows

Oak woodland habitat is found in the project area and is important to several wildlife species. This habitat type is declining due to dense conditions from lack of fire, and encroaching brush species and conifers.

Dense stands of wedgeleaf and manzanita are common throughout the project area. The lack of fire or other disturbance has led to decadent and less productive forage for big game species.

There are several meadows within the project area. These unique areas are shrinking due to encroaching wedgeleaf, manzanita, oaks, and conifers.

ENVIRONMENTAL CONSEQUENCES

TIMBER HARVEST

T&E SPECIES

At the time of writing, formal consultation is ongoing with the USFW. The project would be covered under Rogue River/South Coast FY 04/05/06/07/08 Medford District, Bureau of Land Management, Rogue River and Siskiyou National Forests Biological Assessment and Biological Opinion (FWS).

A seasonal restriction would be in effect for all activities within ¼ mile of any site containing northern spotted owls. Known sites in the project area would be checked in the year of the action to determine nesting status.

A seasonal restriction would be in effect for all activities within ¼ mile (1/2 mile line-of-site) of any active bald eagle nests. Known nest sites within the project area would be checked in the year of the action to determine nesting status.

Mandatory project design features in the USFW BO would be followed (See project design features).

SUMMARY OF SUITABLE SPOTTED OWL HABITAT DISTURBANCE				
Alternative	Total suitable NSO habitat proposed for entry	Total unsuitable NSO habitat proposed for entry	Total suitable habitat to unsuitable habitat	Total suitable habitat to dispersal habitat
No Action	0	0	0	0
Alternative 2	467	36	98	369
Alternative 3	467	36	18	449
Alternative 4	467	36	98	369
Alternative 5	467	36	18	449

Table 1: Comparison of spotted owl habitat effects by alternative

The proposed actions, while potentially adversely disrupting local individuals of sensitive wildlife species and causing loss of habitat in some cases, is not expected to affect long term population viability of any species known to be in the area. Activities under all alternatives would not lead to the need to list sensitive wildlife species.

EFFECTS OF ALTERNATIVE 1 – NO ACTION

TIMBER HARVEST

Threatened and Endangered Species

The No Action Alternative would have no immediate direct effect on the NSO. Under the No Action Alternative, no suitable NSO habitat would be removed or altered.

The No Action Alternative would have “no effect” on the bald eagle.

Other Wildlife

With the No Action Alternative, wildlife habitat and populations would continue at current trends. Without the proposed treatments of the timber stands, current levels of habitat would be allowed to develop naturally. Coarse woody debris and snag recruitment would continue to increase naturally, which would provide additional habitat in the long term for species associated with coarse woody debris and snags.

FUEL HAZARD REDUCTION

Threatened and Endangered Species

With the no action alternative, dense stands and fuel hazards would slowly continue to build. This could leave adjacent northern spotted owl sites and suitable habitat vulnerable if a large stand replacement fire occurs.

Other Wildlife

With the No Action Alternative, the size of many natural openings and meadows would continue to shrink due to encroachment from conifers and wedgeleaf. In the long term, this could limit the amount of suitable forage habitat for great gray owls and big game species.

Under the No Action Alternative, current trends in the oak woodlands and wedgeleaf habitat would continue. Presently, the lack of fire or other disturbance has led to decadent and less productive forage for big game species. The brush species that provide forage for big game species would be expected to decline. Without treatment, better forage conditions would not be expected to develop. The increased density of decadent wedgeleaf would reduce movement and limit travel for big game species.

Under the No Action Alternative, one pump chance north of Lost Creek Reservoir (T32-R2E-Section 33 on road 32-2E-34) would not be repaired. Under current conditions, this pump chance would continue to fill with soil and vegetation and it would be difficult for wildlife to access for an additional water source.

SHORT TERM USES VS. LONG TERM PRODUCTIVITY

Without the loss of habitat from timber harvest, a long term increase in productivity for late-successional dependent species is expected to occur. Some areas that would not be thinned or burned would develop late-successional characteristics at a slower rate. A long term decrease in productivity for open grassland and early seral shrub land dependent species is expected to occur, without the treatment of encroaching conifers and decadent brush development.

IRREVERSIBLE/ IRRETRIEVABLE COMMITMENT OF RESOURCES

None identified.

CUMULATIVE EFFECTS

No change expected from current trends within the watershed. Non-federal lands would be harvested and most would remain in early-to-mid seral conditions. The amount of suitable spotted owl habitat has been reduced by approximately 2,887 acres in the adjacent Elk Creek Watershed due to the Timbered Rock fire in July, 2002.

EFFECTS OF ALTERNATIVE 2

TIMBER HARVEST

Threatened and Endangered Species

Approximately 503 acres of matrix land would be treated for timber harvest.

Alternative 2 may adversely affect the northern spotted owl (NSO) since suitable habitat would be removed near known owl sites. Alternative 2 would have the greatest impact to northern

spotted owls of the 4 action alternatives considered due to the greatest loss of nesting/roosting/foraging and dispersal habitat as well as increased disturbance from harvest activities. Approximately 467 acres of suitable NSO habitat would be entered (See Table 1). This proposal would remove approximately 98 acres of suitable NSO habitat through regeneration harvest. This treatment type would result in the loss of 91 acres of suitable nesting habitat and the loss of 7 acres of suitable dispersal habitat. Areas which would be treated for density management and selective cut would leave more than 40% canopy cover. These treatment areas would be expected to remain as spotted owl dispersal habitat.

Approximately 150 acres of proposed timber harvest would occur in a designated northern spotted owl critical habitat unit (CHU-34). Under Alternative 2, approximately 83 of these acres within the CHU would be regeneration harvest. This would result in the greatest loss of suitable spotted owl habitat within the CHU of the four action alternatives.

The project meets the FSEIS and RMP ROD minimum guidelines and consultation with the USFW will be completed before the Decision Record is signed. A ¼ mile seasonal restriction would be in place to reduce noise and activity disturbance to active NSO sites during times when the owls are nesting.

Alternative 2 would have the greatest impact to the connectivity block in T33S – R01E - Section 1. 23 acres are proposed for regeneration harvest, and 9 acres are proposed for selective cut or density management harvest. The 23 acres of regeneration harvest would be non-suitable northern spotted owl habitat after harvest. However, only 10% of the available late successional habitat would be entered. 305 acres of the best late successional habitat in the section have been deferred from harvest at this time. 46 % of the section would still provide late successional habitat.

The Lost Creek Watershed Analysis suggests maintaining additional patches (40-80 acres) of forest stands in long-term rotation and light-touch entry to provide older stand structure connectivity along a two mile wide corridor between two designated LSR blocks (pg. 77). Alternative 2 would not accomplish this because approximately 59 acres in T32S - R1E – Section 33 are proposed for regeneration harvest. This would remove suitable nesting/roosting/foraging and dispersal habitat within this proposed 2 mile wide corridor.

According to the Medford Resource Management Plan (pg. 57), older forests would be retained within ½ mile of the known bald eagle nests. No timber units are planned within ½ mile of these nests. The RMP also suggests retaining two 80 acre areas for future nest sites. The Lost Creek Watershed Analysis recommends sections 14 and 23 to meet this objective. In Alternative 2, the treatments in sections 14 and 23 would meet this objective. In Alternative 2, 85 acres in section 14 would be thinned, hand-piled and underburned. This treatment would reduce the present levels of ladder fuels, which would increase the chance of the survival of the larger trees in this section in the event of a large stand-replacement fire. In this alternative, 48 acres of density management are proposed in section 23. This treatment would allow for the development and maintenance of large, healthy trees. 115 acres would also be thinned, hand-piled and underburned in section 23.

No known bald eagle nest trees, perch trees, or roost trees would be cut. Suitable eagle habitat within ¼ mile of the nest would not be removed. Large snags within ½ mile of the nest would not be cut, except as needed to protect human safety. A seasonal restriction would be in place from January 1 to August 31 for any year nesting occurs.

Other wildlife

Alternative 2 would lead to greatest loss of future snags and coarse woody debris due to the higher number of acres proposed for regeneration harvest. Minimum ROD standards and guidelines would be met. Under all proposed actions, some snags may need to be felled for safety reasons, but would be left as coarse woody material. This could result in the loss of cavity nesting habitat, and could disrupt the nesting/breeding cycle for some species, depending on the season the unit is harvested.

In Alternative 2, 61 acres in the winter range and management area would be treated with timber harvest. The treatment type for all 61 acres would be density management. This would reduce the canopy cover to 40-60%. Even though some thermal cover would be lost, the effects have been mitigated by deferring 20% of the thermal cover in the project area from treatment (720 acres). Only 0.3 miles of new road construction would occur in the winter range and management area. This section of road would be decommissioned after harvest which would minimize disturbance and poaching pressure. These activities and effects are common throughout all alternatives.

Alternative 2 would have the greatest impact to neotropical birds. Approximately 98 acres are proposed for regeneration harvest under this alternative. This would remove a higher amount of cover and nesting habitat for some neotropical birds that use older forests. Buffers for Survey and Manage species would preserve small patches of habitat for cover and nesting birds. As mentioned above, minimum ROD guidelines would be met to provide snags for cavity nesting species. The effects would be negligible to the birds on the Fish and Wildlife Birds of Concern list that are suspected to be found within the project area. While the proposed actions would remove habitat for some birds, other birds such as the olive-sided flycatcher would benefit from the activities. Flycatchers forage in open areas and can benefit from understory thinning.

FUEL HAZARD REDUCTION

Threatened and Endangered Species

Under Alternative 2, dense stands and fuel hazards would be reduced. This would minimize the risk of losing adjacent NSO sites and suitable habitat if a large stand replacement fire occurs.

Other Wildlife Species

In Alternative 2, 284 acres would be treated mechanically with a slashbuster. While slashbuster activities could cause increased damage to habitat and the loss of some local individuals, the overall effects would be minimal within the project area. Slashbuster treatments would only occur in 11% of the 2,625 total acres proposed for fuels treatments within the project area.

Fuels treatments, such as prescribed fire, thinning, hand piling, and slashbuster treatments in the spring, could result in the loss of some ground nesting birds. Spring burning often creates a mosaic with patches of brush and cover which do not burn due to moisture conditions, but the loss of some bird habitat and potentially nestlings would be expected. Early spring or fall burning would be the preferred method if environmental conditions are acceptable. Buffers for Survey and Manage species would preserve small patches of habitat for cover and nesting birds. There is no planned take of any individual birds as part of the proposed actions. The

effects would be negligible to the birds on the Fish and Wildlife Birds of Concern list that are suspected to be found within the project area. While the proposed actions would remove habitat for some birds, other birds such as the olive sided flycatcher would benefit from the activities. Flycatchers forage in open areas and can benefit from understory thinning.

The 22 locations of Oregon Shoulderband terrestrial mollusks in fuels units would be buffered with a 50 foot radius no treatment buffer. This would help maintain the microclimate and key habitat features at the site. This meets both the current management guidelines, the *Draft Management Recommendations for Helminthoglypta hertleini, the Oregon Shoulderband, Version 2.0* (October 15, 1999) and the *Survey and Manage Management Recommendation Amendments for Fuel Hazard Reduction Treatments Around At-Risk Communities, Group 2* (February 23, 2003). Perennial streams and known seeps and springs would be buffered, which would also protect potential Crater Lake Tightcoil, *Pristiloma arcticum crateris*, mollusk sites. However, no Crater Lake Tightcoil mollusks were located during surveys.

Approximately 720 acres were removed from potential fuels treatments to meet the minimum RMP 20% thermal cover requirements. An additional 87 acres in the “Big Game Winter Range and Elk Management Area” were removed from timber harvest, but proposed fuels treatments in these areas would still maintain a higher canopy closure to provide thermal cover. Approximately 750 acres of wedgeleaf habitat would receive fuel treatments in the winter range and management area. These treatments would improve forage conditions.

50-60% of untreated brush habitat would be left within the fuels treatment areas in the wedgeleaf communities. The untreated areas would be left in a mosaic pattern, with a variety of patch sizes, as well as individually spaced tree and brush species. This would allow for hiding cover for big game species, and cover and nesting habitat for bird species. These patches would also serve as refuge for other wildlife species.

Under Alternative 2, one pump chance north of Lost Creek Reservoir would be repaired (T32-R2E-Section 33 on road 32-2E-34). A variety of wildlife species would benefit from the removal of dense vegetation and soil to improve the storage capacity of this additional water source. It is currently too overgrown to provide suitable open water habitat for foraging bats.

EFFECTS OF ALTERNATIVE 3

TIMBER HARVEST

Threatened and Endangered Species

Approximately 503 acres of matrix land would be treated for timber harvest.

Alternative 3 may adversely affect the northern spotted owl since suitable habitat would be removed near known owl sites. Approximately 467 acres of suitable NSO habitat would be entered (See Table 1). Alternative 3 would have a lesser degree of impact to northern spotted owls of the 4 action alternatives considered. The same number of acres would be treated, but this proposal would only remove approximately 18 acres of suitable habitat through regeneration harvest compared to 98 acres of regeneration harvest in Alternatives 2 and 4. All

18 acres of regeneration harvest in Alternative 3 would be suitable nesting habitat prior to harvest. Areas which would be treated for density management would leave more than 40% canopy cover. These treatment areas would be expected to remain as spotted owl dispersal habitat.

Approximately 150 acres of proposed timber harvest would occur in a designated northern spotted owl critical habitat unit (CHU-34). Under Alternative 3, approximately 12 of these acres within the CHU would be regeneration harvest. In Alternative 3, the effects to the spotted owl critical habitat unit would be minor since fewer acres of suitable spotted owl habitat within the CHU would be lost compared to Alternatives 2 and 4.

Alternative 3 would have a lower impact to the connectivity block in T33S - R1E – Section 1. All 32 acres proposed for harvest would be selective cut or density management harvest. Regeneration harvest would not occur in this section under Alternative 3. These acres of treatment would be expected to provide spotted owl dispersal habitat after harvest.

The Lost Creek Watershed Analysis suggests maintaining additional patches (40-80 acres) of forest stands in long-term rotation and light-touch entry to provide older stand structure connectivity along a two mile wide corridor between two designated LSR blocks (pg. 77). Alternative 3 would help accomplish this because approximately 59 acres in T32S - R1E – Section 33 are proposed for selective and density management harvest. This would retain dispersal habitat within this proposed 2 mile wide corridor to supplement the owl core “stepping stones.”

Other Wildlife Species

In Alternative 3, more snags and coarse woody debris would be retained because only 18 acres are proposed for regeneration harvest. Minimum ROD standards and guidelines would be met. Under all proposed actions, some snags may need to be felled for safety reasons, but they would be left for coarse woody material. This could result in the loss of cavity nesting habitat, and could disrupt the nesting/breeding cycle for some species, depending on the season the unit is harvested.

The higher number of thinning treatment acres in Alternative 3 could be beneficial for northern goshawks. Both density management and selective cut treatments would reduce the stand density and produce more suitable goshawk habitat and provide better foraging conditions. In the Butte Falls Resource Area, goshawk nests have been found in two timber sale units after the units were commercially thinned. There is no evidence that Alternative 2 would lead to the need to list the goshawk as T&E species.

Under Alternative 3, there would be fewer impacts to neotropical birds within the project area compared to Alternative 2. Only 18 acres are proposed for regeneration harvest under this alternative vs. 98 acres in Alternative 2. A higher amount of cover and nesting habitat for some neotropical birds that use older forests would be retained in Alternative 3. Buffers for Survey and Manage species would preserve small patches of habitat for cover and nesting birds. As mentioned above, minimum ROD guidelines would be met to provide snags for cavity nesting species.

FUEL HAZARD REDUCTION

Threatened and Endangered Species

The effects of fuel hazard reduction would be the same as in Alternative 2.

Other Wildlife Species

The effects of fuel hazard reduction would be the same as in Alternative 2.

The effects of repairing the pump chance would be the same as in Alternative 2.

EFFECTS OF ALTERNATIVE 4

TIMBER HARVEST

Threatened and Endangered Species

The effects of timber harvest would be the same as in Alternative 2.

Other Wildlife Species

The effects of timber harvest would be the same as in Alternative 2.

FUEL HAZARD REDUCTION

Threatened and Endangered Species

The effects of fuel hazard reduction would be the same as in Alternative 2.

Other Wildlife

The overall effects of fuel hazard reduction would be the same as in Alternative 2. However, in Alternative 4, no units would be treated mechanically with a slashbuster. Therefore, the effects to ground nesting birds would be minimized.

The effects of repairing the pump chance would be the same as in Alternative 2.

EFFECTS OF ALTERNATIVE 5

Threatened and Endangered Species

The effects of timber harvest would be the same as in Alternative 3.

The effects of fuels treatments would be the same as in Alternative 4.

Other Wildlife Species

The effects of timber harvest would be the same as in Alternative 3.

The effects of fuels treatments would be the same as in Alternative 4.

The effects of repairing the pump chance would be the same as in Alternative 2.

SHORT TERM USES VS LONG TERM PRODUCTIVITY FOR ALL ACTION ALTERNATIVES

Under Alternatives 2 and 4, timber harvest would result in the greatest loss of habitat for late-successional dependent species. These species would not be expected to recover until late-successional characteristics recover, which could be in 80 to 100 years.

An immediate reduction of forage for big game species would be expected with all action alternatives. However, long term foraging in open areas would be rejuvenated as a result of fuels treatments.

IRREVERSIBLE/ IRRETRIEVABLE COMMITMENT OF RESOURCES FOR ALL ACTION ALTERNATIVES

No irreversible effects are identified. In Alternatives 2 and 4, irretrievable commitments would be the loss of 98 acres of large overstory trees in the regeneration harvest units. In Alternatives 3 and 5, irretrievable commitments would be the loss of 18 acres of large overstory trees in the regeneration harvest units. Habitat and connectivity for late-successional species would be provided by riparian reserves, northern spotted owl 100 acre activity centers, and LSR patches in the matrix.

CUMULATIVE EFFECTS FOR ALL ACTION ALTERNATIVES

Under all action alternatives, a reduction of late successional wildlife habitat would occur within the watershed. Habitat protection buffers for the northern spotted owl and other wildlife species would help minimize the cumulative effects to wildlife species within the project area.

Non-federal lands would be harvested and most would remain in early-to-mid seral conditions. The amount of suitable spotted owl habitat has been reduced by approximately 2,887 acres in the adjacent Elk Creek Watershed due to the Timbered Rock fire in July, 2002.

**BUTTE FALLS RESOURCE AREA
SENSITIVE SPECIES REVIEW (May 2003)**
(Table 2)

Project: Flounce Around Timber Sale / Fuels Reduction

U.S.F.W. / OREGON T & E SPECIES						
Species	Status	Range (Y/N)	P/A	Habitat Quality	Survey Level	Comments
American bald eagle	FT	Y	P	High	High	Nests protected
American Peregrine falcon	SE;BS	Y	S	Medium	Limited	No known nests in watershed
Northern Spotted owl	FT	Y	P	Medium	Thorough	LSR, Seasonal Restrictions, No-cut cores, nests protected.
Vernal pool fairy shrimp	FT	N	A	N/A	None	No suitable vernal pools in the project area.

STATE CRITICAL AND BUREAU SENSITIVE SPECIES						
Species	Status	Range (Y/N)	P/A	Habitat Quality	Survey Level	Comments
Black-backed woodpecker	BS	U	U	Low	None	None documented
Cascades frog	BA	Y	S	Medium	Limited	None documented in project area. Present in Lost Creek watershed.
Common kingsnake	BA	Y	S	Medium	None	None documented
Crater Lake tightcoil	BS, SM	Y	S	Medium	Thorough	None detected
Fisher	BS	Y	S	Low	None	None documented
Flammulated owl	BOCC	Y	S	Medium	None	None documented
Foothill yellow-legged frog	BA	Y	S	Medium	Limited	None documented, but suspected
Fringed myotis	BA; PB	U	S	Low	Limited	None documented
Great gray owl	SM	Y	S	Medium	Thorough	Surveyed; No known nests
Lewis' woodpecker	BOCC ; BS	Y	S	Medium	None	None documented
Long-eared myotis						None documented in project area. Present in Lost Creek watershed.
	PB	Y	S	Medium	Limited	
Long-legged myotis	PB	U	S	Medium	Limited	None documented

STATE CRITICAL AND BUREAU SENSITIVE SPECIES						
Species	Status	Range (Y/N)	P/A	Habitat Quality	Survey Level	Comments
Northern goshawk	BS	Y	P	Medium	Thorough	Surveyed; Known nests protected
Olive-sided flycatcher	BOCC	Y	P	Medium	Incidental	Detected during other wildlife surveys
Oregon Shoulderband	BS, SM	Y	P	Medium	Thorough	Known detections protected
Western pond turtle	BS	Y	P	Low	Limited	None detected on BLM land
Pallid bat	PB	U	S	Medium	Limited	None detected None detected. Units East of Lost Creek
Red Tree Vole	SM	Y/N	S	Low	Thorough	Reservoir outside the known range.
Rufous hummingbird	BOCC	Y	S	Medium	Incidental	Detected during other wildlife surveys
Silver-haired bat	PB	Y	S	Medium	Limited	None documented in project area. Present in Lost Creek watershed.
Siskiyou Sideband	SM	Y	S	Medium	Thorough	None detected
Tailed frog	BA	Y	U	Low	Limited	None detected
Three-toed woodpecker	BS	N	A	Low	None	None documented
Townsend's big-eared bat	BS	Y	S	Medium	Limited	None documented
White-headed woodpecker	BOCC ; BS	N	T	Low	None	None documented

Table 2: Special Status Species Review

Status:

FT - Federally Threatened

SE - State Endangered - (note, Peregrine falcons were federally de-listed in 1999, but have not been down-listed in the state of Oregon, due to lack of funds.

SM - Survey & Manage - Forest plan ROD directs protection of known sites and/or survey for new sites

BS - BLM Bureau Sensitive - species that could easily become endangered or extinct. They are restricted in range and have natural or human-caused threats for survival.

BA – BLM Bureau Assessment – species that are not presently eligible for official federal or state status but are of concern, and may, at a minimum need protection or mitigation in BLM activities.

PB – Protection Buffer – Certain survey and manage species that occur outside their designated areas. Any occupied sites would be protected.

BOCC – US Fish and Wildlife Service Birds of Conservation Concern list

P/A Presence:

P - Present

S – Suspected

U – Uncertain

A - Absent

American bald eagle (*Haliaeetus leucocephalus*)

A proposal to remove the American bald eagle from threatened status was considered by U.S.F.W. in 2000. A determination was made to delay the decision until more information is processed. They remain a Federally threatened species.

One bald eagle nest is present in the Lost Creek watershed near Lost Creek Reservoir on Army Corps of Engineer land. Adult and subadult bald eagles have also been observed north of Lost Creek Reservoir during the winter months. An additional nest is located in an adjacent watershed near the mouth of Elk Creek. Lost Creek Reservoir and open fields along the reservoir provide good foraging. Eagles prey on fish, waterfowl, small mammals (rabbits, etc.), and carrion.

Eagles nest in trees are the larger, dominant or co-dominant trees in the stand. These trees are usually components of old growth or older second growth forests.

American Peregrine falcon (*Falco peregrinus anatum*)

Peregrine falcons were de-listed by U.S. Fish and Wildlife Service in 1999 (Federal Register Volume 64, No. 164, page 46542-46558. August 25, 1999). Protection of nest sites is still required. They remain on the BLM Bureau-sensitive species list. They remain Oregon State endangered and are on the US Fish and Wildlife Service Birds of Conservation Concern list.

Peregrines nest primarily in tall cliffs. One active nest site is known within the adjacent Elk Creek Watershed. Suitable cliffs are present in the watershed, and incidental sightings have occurred.

Prey is mostly birds, especially doves and pigeons. Peregrines also prey on shorebirds, waterfowl, and passerine birds. Forest lands provide habitat for prey species for peregrine falcons.

Black-backed woodpecker (*Picoides arcticus*)

The black-backed woodpecker is a Bureau-sensitive species. Presence has not been documented in the Butte Falls Resource area. In Oregon, black-backed woodpeckers are present in higher elevation forests (above 4500 feet). It is closely associated with lodgepole pine and spends most of its time feeding in older lodgepole pine trees.

Cascades frog (*Rana cascade*)

The Cascades frog is a Bureau-assessment species. Cascades frogs are found in the Cascade Mountains, above 2600 feet. They are most commonly found in small pools adjacent to streams

flowing through meadows. Cascades frogs have not been observed in the Flounce Around Project Area. However, they have been observed within the Lost Creek Watershed, approximately 4 miles east of the project area.

Common kingsnake (*Lampropeltis getulus*)

Common kingsnake is a Bureau-assessment species. Common kingsnake are found in oak/pine woodlands, open brushy areas. They are also found in river valleys along streams in thick vegetation. They may also be found in farmlands, especially near water areas. Suitable habitat is limited in the watershed. They could be present in the project area.

Fisher (*Martes pennanti*)

Fisher is a Bureau-sensitive species. Fisher habitat is mature and old growth forests. They appear to be closely associated with riparian areas in these forests. They mainly use large living trees, snags and fallen logs for dens. Fishers were documented in Butte Falls Resource Area during Pacific Northwest Research Station research project on Rogue River National Forest, east of the Flounce Around Project Area.

Flammulated owl (*Otus flammeolus*)

Flammulated owl is on the US Fish and Wildlife Service Birds of Conservation Concern list. Habitat is open coniferous forests. Dependent on large primary cavity excavators (Pileated woodpeckers, flickers, and sapsuckers). Flammulated owls have been observed in two adjacent watersheds.

Foothill yellow-legged frog (*Rana Boylii*)

Foothill yellow-legged frog is a Bureau-assessment species. Habitat is permanent streams with rocky, gravelly bottoms. Distribution is west of the Cascade crest from sea level to 1800 feet. These frogs are closely associated with water. None have been detected within the project area, but they could occur here.

Fringed myotis (*Myotis thysanodes*)

Fringed myotis is a Bureau-assessment and protection buffer species. Fringed myotis is a crevice dweller which may be found in caves, mines, buildings, rock crevices, and large old growth trees. They have been captured in openings and in mid seral stage forest habitats. Food consists of beetles, butterflies, and moths.

Great gray owl (*Strix nebulosa*)

Great gray owl is a Survey and Manage species. Habitat preference is open forest or forest with adjoining deep-soil meadows. They nest in broken top trees, abandoned raptor nests, mistletoe clumps, and other platforms created by whorls of branches. They are likely found in low densities across the district.

Lewis' woodpecker (*Melanerpes lewis*)

Lewis' woodpecker is a Bureau-sensitive species and is on the US Fish and Wildlife Service Birds of Conservation Concern list. These woodpeckers breed sparingly in the foothill areas of the Rogue River valley. Habitat preference is hardwood oak stands with scattered pine near grassland shrub communities. Breeding areas in the Rogue valley are uncertain. They usually do not excavate nest cavities, but most often use cavities excavated by other woodpecker species. They winter in low elevation oak woodlands.

Long-eared myotis (*Myotis evotis*)

Long-eared myotis is a protection buffer species. They are crevice dwellers found in coniferous forests in the mountains. Individuals are frequently encountered in sheds and cabins. They have also been found beneath the loose bark of trees. They seldom reside in caves, but may occasionally use caves as a night roost. They are not known to occur in large colonies.

Long-legged myotis (*Myotis volans*)

Long-legged myotis is a protection buffer species. They are an open-forest dweller found in small pockets and crevices in rock ledges, caves, and buildings. When in caves, they hang in clumps in deep twilight zones.

Northern goshawk (*Accipiter gentilis*)

Goshawk is a Bureau-sensitive species. Goshawks are found in a variety of mature forest types, including both deciduous and conifer types. Dense overhead foliage or high canopy cover is typical of nesting goshawk habitat. Perches where they pluck their prey, known as plucking posts, are provided by stumps, rocks, or large horizontal limbs below the canopy. 2 nests have been located within the Lost Creek watershed, and only 1 nest is within the Flounce Around Project Area boundary.

Northern spotted owl (*Strix occidentalis caurina*)

Northern spotted owl is a Federally Threatened species. Old growth conifer forest is preferred nesting, roosting and foraging habitat, or areas with some old growth characteristics. They prefer multi-layered, closed canopies with large diameter trees with an abundance of dead and down woody material. Northern spotted owls nest in cavities 50 or more feet above the ground in large decadent old growth trees. They also nest in large mistletoe clumps, abandoned raptor nests, and platforms formed by whorls of large branches. Prey is primarily small arboreal mammals, such as flying squirrels, woodrats, voles, etc. and occasionally small birds.

Western pond turtle (*Clemmys marmorata marmorata*)

Western pond turtle is a Bureau-sensitive species. They live in most types of freshwater environments with abundant aquatic vegetation, basking spots, and terrestrial surroundings for nesting and over-wintering. Some western pond turtles leave water in late October to mid-November to overwinter on land. They may travel up to 1/4 mile from water, bury themselves in duff and remain dormant throughout winter. Turtles have been found to generally stay in one place in areas with heavy snowpack, but may move up to 5-6 times in a winter in areas with little or no snow. General habitat characteristics of overwintering areas appear to be broad.

In many areas, predation on the hatchlings and competition from bullfrogs, bass, and other exotic species is limiting population levels.

Olive-sided flycatcher (*Contopus borealis*)

Olive-sided flycatcher is on the US Fish and Wildlife Service Birds of Conservation Concern list. Habitat is coniferous forests and open woodlands. They use snags for perches.

Oregon shoulderband (*Helminthoglypta hertleini*)

Oregon shoulderband is a Bureau-sensitive mollusk species. It was removed from the Survey and Manage list in May 2003. They are generally associated with moist rocky areas. 22 Oregon shoulderband locations were discovered in the project area during mollusk surveys.

Pallid bat (*Antrozous pallidus*)

Pallid bat is a protection buffer species. This bat is a crevice dweller. Rock crevices and human structures are used as day roosting sites. Recent radio telemetry studies indicate that pallid bats use interstitial spaces in the bark of large conifer trees as a roost site. They also have been observed roosting in a hollow tree. Food consists of beetles, grasshoppers, moths, and other insects found on or near the ground or on grasses or shrubs.

Red tree vole (*Arborimus longicaudus*)

Red tree vole is a Survey and Manage species. An arboreal vole which lives in douglas fir, spruce, and hemlock forests. Food consists entirely of needles of the tree in which they are living. They build a bulky nest, up to the size of a half bushel measure in the branches, usually near the trunk, 15-100 feet above the ground. The nest becomes larger with age, and may be occupied by many generations.

Rufous hummingbird (*Selasphorus rufus*)

Rufous hummingbird is on the US Fish and Wildlife Service Birds of Conservation Concern list. Habitat is open coniferous forests, oakwoodlands, shrubs, and riparian areas. Needs open space for aerial courtship displays.

Silver-haired bat (*Lasionycteris noctivagans*)

Silver-haired bat is a protection buffer species. The species is a tree dweller, living mostly under bark and in tree trunks. It may also be found roosting in foliage of trees. Silver-haired bats are rarely found in human structures.

Siskiyou Sideband (*Monadenia chaceana*)

Siskiyou sideband is a Survey and Manage mollusk species. Their habitat is under rocks, talus, and woody debris in moist conifer forests and in shrubby areas in riparian corridors. No Siskiyou sideband mollusks were detected from mollusk surveys in the project area.

Tailed frog (*Ascaphus truei*)

Tailed frog is a Bureau-assessment species. Their habitat is cold, fast flowing permanent streams in forested areas. Temperature tolerance range is low, 41-61 degrees Fahrenheit. Tailed frogs are closely tied to water.

Three-toed woodpecker (*Picoides tridactylus*)

Three-toed woodpecker is a Bureau-sensitive species. Presence is undetermined in the Butte Falls Resource Area. Range is along the crest of the Cascade Range and eastward. Generally they are found in higher elevation forests, above 4000 feet. In eastern Oregon, three-toed woodpeckers nest and forage in lodgepole pine forests. They are occasionally found roosting in hemlock and Engelmann spruce trees in mature and over mature mixed conifer forests. Bark beetle larvae are primary food source.

Townsend's big-eared bat (*Corynorhinus townsendii*)

Townsend's big-eared bat is a Bureau-sensitive species. They roost in mines, caves, cavities in trees, and attics of buildings. They have low tolerance to changes in temperature and humidity and removal of trees around these sites may change airflow patterns to make the area less desirable as a hibernaculum, maternity, or roosting site. Food consists primarily of moths, and other arthropods.

Vernal Pool Fairy Shrimp (*Branchinecta lynchi*)

Vernal pool fairy shrimp are a Federally threatened species. Habitat is vernal pools. They have only been found in Agate Desert and Table Rock areas in Oregon.

White-headed woodpecker (*Picoides albolarvatus*)

White-headed woodpecker is a Bureau-sensitive species and is on the US Fish and Wildlife Service Birds of Conservation Concern list. They are closely associated with ponderosa pine or ponderosa pine-mixed conifer forests. It requires large trees for foraging. They are found on the Dead Indian Plateau. Presence in the Butte Falls Resource Area is undetermined.

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Appendix D Soils / Hydrology

Existing Environment – Soils

The dominant soil types on the north side of Lost Creek Reservoir are derived from basalt and andesite volcanic rocks. The most abundant soils found in this portion of the project area are the McNull, Medco, and McMullin soil series. These are soils predominantly found in association with one another throughout the landscape.

The McNull soils are moderately deep (20-40 inches) weathered andesitic and tuffaceous bedrock. They typically have a clayey subsoil (greater than 35% clay content) with a loam or gravelly loam surface layer. Due to clay content, these soils are subject to compaction and slope instability. Older slumps and benches can be found in forested areas particularly where the Medco soils are found in association with them.

The Medco soils are moderately deep to highly weathered tuffaceous bedrock. They typically have a high clay content (greater than 50%) in the subsoil with a gravelly or cobbly clay loam surface layer. These soils are considered fragile due to severe hazard for compaction, slope instability, and potentially high water tables resulting from the dense clay subsoil. Road failures (cutbank and fillslope slumping) and slope failures (e.g. benchy and hummocky topography with jack-strawed trees) are common landscape features where these soil types are dominant.

The McMullin soils are shallow (less than 20 inches) to hard, fractured, andesitic bedrock. They typically have a gravelly or cobbly clay loam subsoil with a gravelly or cobbly loam surface layer. These soil types are found in association with the McNull, Medco, and rock outcroppings throughout this portion of the landscape. Due to their shallowness and high rock content, they typically only support shrub, grasses, and forbs vegetative communities. They are usually found in meadows and around the periphery of rock outcroppings. Since they have thin organic and mineral surface layers, they have rapid hydrologic response to runoff which leads them to be prone to gully and rill erosion from mechanical disturbance.

In section 31 and 35 south of the Lost Creek Reservoir the dominant soil types are the Freezner and Geppert soil series.

The Freezner soils are very deep 60+ inches to weathered andesitic bedrock. They typically have a gravelly loam surface and a clay loam sub-soil. These soils support a highly productive stand of conifer trees with compaction the most limiting factor from management activities. They are mostly found on flat benches and gently sloping hillsides. They are also found on steeper sideslopes in complex with the Geppert soils.

The Geppert soils are moderately deep (20-40 inches) to fractured andesitic bedrock with greater than 35% rock fragments in the sub-soil. They typically have a cobbly loam surface layers and a extremely cobbly clay loam sub-soil. This extremely cobbly sub-soil restricts rooting depth and limits the waterholding capacity of this soil type. Windthrow can be a hazard on these soils. Conifer trees are typically the dominant vegetative component. They are mostly found on side-slopes and narrow ridge tops.

For a detail soil unit map and list of soil types see EA file attachments. The Jackson County Soil Survey conducted by the Soil Conservation Service 1987 and spot field reconnaissance were used to identify soil types and inclusions within this project area. This level of survey is considered adequate for meeting stated soil objectives. It should also be noted that all project design features (PDFs) are designed to mitigate soil impacts on the most restrictive soil type in a given unit.

See EA file for soil maps of individual project units.

Watershed

See the Lost Creek Watershed Analysis for over view and description of the streams and hydrologic condition in this project area. In the Flounce Rock and Burnt Peak portion of the watershed (approx. 21,400 acres: approx. 10,760 acres BLM managed). The dominant issue for streams and water quality in the area is embeddness resulting from sediment delivery from roads, particularly un-surfaced or inadequately surfaced and un-maintained roads. Other risks from roads related to how adequate the structures at streaming crossings are functioning. See Road Related Sediment issue discussion.

Flooding from rain on snow events resulting from accumulated snow packs in openings of the over-story canopy within the (TSZ) transient snow zone (3500-4500' band) are considered to be at a low level of risk. This is because there is a small amount of acres 1,425 or 6.5% of total acres in the TSZ in this portion of the watershed. BLM manages approximately half on this total which would have a negligible effect an potential TSZ issues.

There are no State (303D) water quality limited listed streams in this portion of the watershed.

All soil and water issues not analyzed in detail in this EA are expected to meet the guidelines and objectives of the Lost Creek Watershed Analysis, the MDFO RMP, and the Aquatic Conservation Strategies set forth in the Northwest Forest Plan. They're expected to be met by the type and method of treatments proposed, through implementation of project design features (PDFs), and proposed future restoration projects in this area.

Appendix E Silvicultural Prescriptions, Marking Guidelines, & Stand Inventory Summary

I. Management Direction and Objectives

Management Direction

On matrix lands, as defined by the Medford District Resource Management Plan (RMP) and the Record of Decision (ROD) for the Northwest Forest Plan the following objectives are to be met.

- Produce a sustainable supply of timber and other forest commodities to provide jobs and contribute to community stability.
- Provide connectivity (along with other allocations such as riparian reserves) between late-successional reserves.
- Provide habitat for a variety of organisms associated with both late-successional and younger stands.
- Provide for important ecological functions such as dispersal of organisms, carryover of some species from one stand to the next, and maintenance of ecologically valuable structural components such as down logs, snags and large trees
- Provide early successional habitat
- Reduce tree mortality and restore the vigor, resiliency, and stability of forest stands

Treatment Objectives

Implement management activities that would initiate the development of a landscape that has the ability to buffer and absorb disturbances, such as fire, insects, disease, drought, floods and potential climate change, rather than to magnify those disturbances. To meet this objective the following management treatments are planned.

- Manage mature forest stands to develop and maintain healthy large conifer trees, favoring drought tolerant species (ponderosa pine, sugar pine, incense cedar and Douglas-fir).
- Reduce densities in overstocked forest stands to increase tree vigor and redistribute growth to the largest and healthiest trees.
- Regenerate forest stands that are declining, retaining structural and functional components and provide for the reestablishment of shade intolerant conifer species.

II. Site/Stand Condition

1. General Description of the site

The proposed treatment area is located within Jackson County and approximately 25-30 air miles northeast of the city of Medford. The area is located in portions of Sections 1, 11, 12, 13, 14, 15, 22, 23, 27, & 35 in Township 33S, Range 1E and Section 33 in Township 32S and Range 2E and Sections 3, 4, 5, 7, 8, 9, 17, 18, 19 in Township 33S, Range 2E.

2. Drainage/Watershed

The proposed treatment area is located within the Lost Creek and Lower Big Butte Creek watersheds.

3. Abiotic Conditions

a. Soil Type

The project area has McNull, Medco and McMullin soil associations. McNull soils are the dominant soil association in the project area. These soils are moderately deep and well drained. Erosion hazard is high for slopes greater than 35%. The underlying bedrock restricts root growth, causing a higher wind throw potential. Medco soils are deep and moderately well drained. Medco soils are subject to severe slumping and are considered fragile soils. A dense clay layer resists root growth and increases wind

throw and compaction potential. This layer can also result in a perched water table. McMullin soils are shallow, well drained soils containing 35% rock fragments. High temperature in the surface layer and insufficient moisture increase seedling mortality.

b. Site Index

The site index for Douglas-fir within the treatment area ranges between 63 to 104 and averages 81 based on Hann-Scrivani site index equations (Hann and Scrivani, 1987). Site index is the average height of the dominant trees at 50 years. Site index is relatively independent of stand density and provides a comparable measure of site productivity between different forest stands.

c. Topography/Precipitation

The elevation in the treatment area ranges from a low of 1900 feet above sea level (ASL) at the edge of Lost Creek Lake to 4100 feet ASL near the top of Flounce Rock. Slopes over most of the project area can be classified as moderate, with most ranging from 10%-50%. Areas of steeper slopes >55%, occupy a small percentage of the total project area

Precipitation amounts average from 35-45" annually. Forms of precipitation include rain and snow, with a combination of rain and snow occurring in the transient snow zone (between 3500 and 5000 feet). Average dry season (May-September) precipitation is 5-6 inches.

d. Existing Site Problems

Fragile soils and slope stability is a concern where slopes exceed 35%. Specific areas of concern are scattered throughout the project area and are identified as sensitive soils in the RMP, map 6. Appendix D of the Medford District RMP provides management direction and mitigation measures when operating on these soil types.

Wind throw is a potential risk throughout the project area due to the soil types present. Two of the soil associations (McNull and Medco) have an underlying bedrock layer that restricts root growth and reduces the anchoring function that roots provide. Where these soil types occur, the risk of wind throw is higher, particularly on ridges, in saddles and in areas with perched water tables.

The high evapotranspiration demand during prolonged hot and dry summer days causes greater tree stress particularly in overstocked forest stands. Plants require at least 75% water content in functional cells (Bradford and Hsiao, 1982). During hot, dry periods, the uptake of moisture can not keep up with the loss through transpiration, when this occurs the plant closes leaf stomates to maintain adequate cell water content. With the leaf stomates closed, carbon dioxide is not taken into the plant through photosynthesis and the conversion of carbon dioxide and water into carbohydrates or "food" does not occur. Without the creation of "food", the life processes of the tree are interrupted resulting in increased tree stress and a higher risk of insect attack or disease infection. Reduced resin flow in water stressed trees, enables insects to successfully attack the tree (Kramer and Kozlowski, 1979).

4. Biotic Conditions

a. Plant Series

Abrupt changes in aspect, slope, soil type and past disturbances (wildfire, insects, disease, and logging) affect forest structure and the type of tree species present. These landscape changes result in a mosaic of forest conditions. This mosaic includes different levels of canopy closure, shifting tree species dominance and varying tree age and size classes.

Four forest plant series are present within the project area, Oregon white oak, ponderosa pine, Douglas-fir and white fir. These plant series generally follow an elevation gradient from lowest to highest. The Oregon white oak series occupies low, hot, dry sites with shallow soils, and it is commonly found on southerly aspects. The ponderosa pine series occurs on sites with shallow droughty soils but generally is found at slightly higher elevations than the Oregon White Oak series. At higher elevations or on sites with

a more northerly aspect the Douglas-fir series occurs. The white fir series occupies the highest elevation sites in the project area. These sites are the most productive as well as the coolest and wettest.

The Douglas-fir plant series is the most common in the project area. Ponderosa pine, sugar pine and incense-cedar make up a small percentage of the overstory tree canopy with Douglas-fir the dominant overstory as well as understory tree species. Madrone and black oak are the main hardwood species. Shrub competition within this plant series is generally low to moderate following canopy opening disturbances. Shrub species present in varying amounts are: ocean spray, hazel, deerbrush ceanothus, Oregon grape (dwarf & piper's), poison oak, and vine maple at the higher elevations.

Two non-forested plant communities are also common within the project area. The first is a shrub or chaparral community, the common shrub species include: buckbrush (*Ceanothus cuneatus*), deerbrush (*Ceanothus integerrimus*), poison oak (*Rhus diversiloba*), and whiteleaf manzanita (*Arctostaphylos viscida*). Tree species present may include black oak (*Quercus kelloggi*) and madrone (*Arbutus menziesii*) with conifer species generally lacking in the overstory. The second non-forested community is meadows. Meadows are present throughout the area and typically can be found on very shallow soils that experience hot and dry temperatures during the summer. Meadows vary in vegetative composition and may include a variety of mosses, mat forming shrubs, grasses and herbs. Rock outcrops are also common.

b. Stand History

Portions of the proposed treatment area have been logged within the past 40 years. In the early 1950's, partial cutting of individual large trees occurred on the west side of Lost Creek Lake. During the 1960's through the 1990's, the majority of logging activity occurred near Flounce Rock in Sections 4, 5 & 33. Timber harvesting in this area consisted of partial cutting, overstory removal, clearcutting and salvage of dead and dying trees. The last harvest entry on any site occurred in 1996, with the salvage of wind throw trees near Flounce Rock in Sections 33 & 5.

Prior to harvest activities, fire was the primary disturbance event. Frequent, low intensity fires were common on the lower elevation sites of the watershed. These fires periodically removed the smaller and less fire resistant tree and shrub species, thereby reducing the competition between residual trees for site resources.

c. Structure Description

The majority of the stands can be classified as multi-layer uneven aged stands. Groups of older trees randomly occur and are representative of the role frequent fire had in the structural development of the stand; with frequent fires most forest stands developed multiple age classes. Decades of fire suppression has lead to the creation of dense stagnant understories in many forest stands. Without the natural thinning effect of low to moderate fires, the amount of understory vegetative continues to increase.

Hardwoods make up the middle layer of many stands and occur as clumps or a widely scattered stand component. Hardwoods represent an early drought tolerant seral tree component, competition between adjacent trees and conifer canopy closure has reduced the vigor and increased the mortality of many of the large hardwood trees.

d. Coarse Woody Debris (CWD)

Coarse woody debris provides habitat for wildlife, invertebrate, microbial and fungal species, as well as providing for important ecological functions such as moisture retention, soil stabilization, and nutrient recycling. Within the project area, coarse woody debris amounts are low with decay class 1 or 2 coarse woody debris greater than 16" dbh limited. Decay class 3, 4, 5 coarse woody debris larger than 16" dbh is also limited on sites below 3000' ASL. The lack of the older decay classes may be linked to lower historic (prior to fire suppression) stand densities, and the frequent wildfires that occurred prior to fire suppression. These repeated fires would have kept the understory and surface layer relatively clean and void of large buildups of woody debris.

Where coarse woody debris does occur it will not be removed from the site and will be protected from disturbance. In forest stands identified for regeneration harvests, trees would be designated and reserved to meet coarse woody debris requirements.

e. Snags

ROD standards and guidelines require that overtime, 1-2 snags be present per acre to meet the requirement for cavity nesting birds at 40% of potential population levels. All classes of snags will be retained as part of the silvicultural prescription. During harvest operations, existing snags will be reserved from felling where they are not a safety hazard, and where necessary, additional green trees will be reserved to meet the target levels. If a snag needs to be fallen for safety concerns, the snag will be left on site to function as coarse woody debris.

f. Tree and Stand Health, Insect and Disease

Laminated root rot (*Phellinus weirri*) is common in Section 33 adjacent to the Ulrich/Flounce Rock road and is causing tree decline in white fir and Douglas-fir. Areas below Willits ridge have experienced higher amounts of wind throw due to this root rot pathogen.

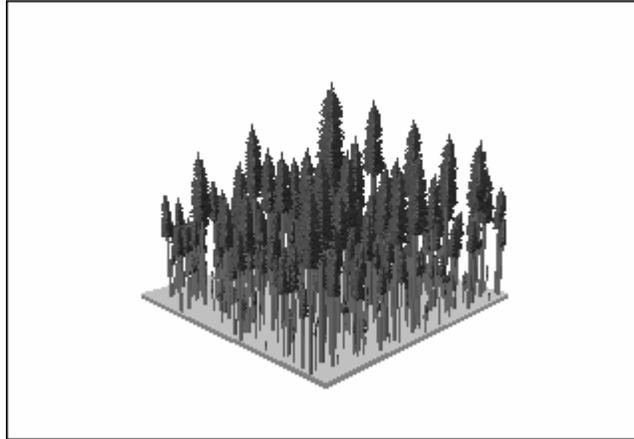
Stem rots (*Phellinus pini*, *Oligoporus amarus*, and *Phaelos schweinitzii*) are also present in all tree species, but do not pose a serious concern for stand health. The trees infected with stem rots enhance forest diversity by providing trees with unique structural defects that serve as plant and wildlife habitat, as well as future coarse woody debris.

The greatest concern and impact upon individual tree and stand health is the level of inter-tree competition resulting from the high numbers of trees within many forest stands. Overstocked stands contain more trees than the site has resources (moisture, nutrients, and growing space) to provide for (Figure 1). This condition leads to increased tree stress particularly during prolonged hot summer days without any precipitation. Decreased tree vigor is magnified during periodic drought years when the cumulative effects of below average amounts of precipitation causes the interruption of basic functional processes (photosynthesis, transpiration, respiration, translocation assimilation) over an extended period of time. In forest stands proposed for management entry stand exams were completed to determine the "relative density". Relative density is a measure of crowding in a stand of trees. It compares the number of trees present to the number of trees that the site has resources to support. Relative density (RD) levels within the units proposed for treatment range between 50% and 100% with an average relative density of 81%. As a point of reference crowns begin to close when the RD approaches 15% and the mortality of suppressed trees begins after the relative density reaches 65% (Perry, 1994; Hann and Wang, 1990). Maintaining the relative density in forest stands between an upper end of 50% and a lower end of 25% prevents excessive tree loss from competition.

Tree senescence or "aging" also plays a role in the condition and vigor of individual trees. As a tree increases in size and builds up a complex branch system, it shows a decrease in metabolism, gradual reduction in growth of vegetative and reproductive tissues, loss of apical dominance, increase in dead branches, slow wound healing, heartwood formation, increased susceptibility to injury from certain insects and diseases, and from unfavorable environmental conditions, and loss of geotropic responses (growth of stems upward and of roots downward in response to gravity). There is also a decrease in the proportion of photosynthetic to non-photosynthetic tissue, this reduction results in less carbohydrates being produced (Kramer and Kozlowski, 1979). Movement of food, water, and minerals becomes more difficult as the distance from the roots to the top of the tree increases. This problem is magnified when water becomes a limiting resource in tall trees. Water deficits may cause needle and stem mortality as evident by snag tops or dead branches and needles in the upper part of the crowns.

In addition to the high numbers of trees per acre and tree aging other factors contribute to individual tree health and vigor. Factors such as, the amount of understory shrub growth, soil type, precipitation, aspect, crown position in the canopy, topography, root pathogens and insects all combine to affect tree vigor and its ability to maintain basic functional processes.

Figure 1. Present Conditions: Forest stands are overstocked with more trees than the site has water, nutrients and growing space to sustain. Without reducing tree density levels to the carrying capacity of the site, tree and stand vigor will decline. As trees increase in size they require more growing space and a larger volume of soil to supply an increasing need for water and nutrients.



III. Analysis in support of the prescription

The target stand reflects not only what is planned for the future but also what is expected immediately after treatment. The target stand represents optimum conditions to strive for through management.

Three types of silvicultural treatments are proposed for the project area. These are: Individual tree selection, regeneration harvest and density management. Individual operational inventory (O.I.) units have been grouped under one of these categories based on the proposed treatment.

1. Density Management(DM) - The O.I. units proposed for this treatment are listed in the marking guidelines.

a. Present Conditions

Stand densities are high, with the number of trees per acre above the long term carrying capacity of the site. In the forest stands identified for this type of treatment, the average relative density is 81%. At relative density levels greater than 55%, the following tree and stand changes begin to occur: competition related mortality becomes significant, increased sensitivity to the effects of drought, self thinning starts, growth declines, volume growth per acre is offset by mortality and an increased susceptibility of trees to insect and disease attack. The tree species composition of these stands is a mixture of Douglas-fir and minor amounts of ponderosa pine and sugar pine. Hardwood species include madrone and black oak.

b. Target Stand - Density Management (DM)

The main objective within these stands is to improve individual tree and stand health. Harvesting within these units will be targeted toward reducing the stocking levels within those areas where overstocked conditions of sapling, pole and mature and timber exists. Density levels will be reduced by removing the

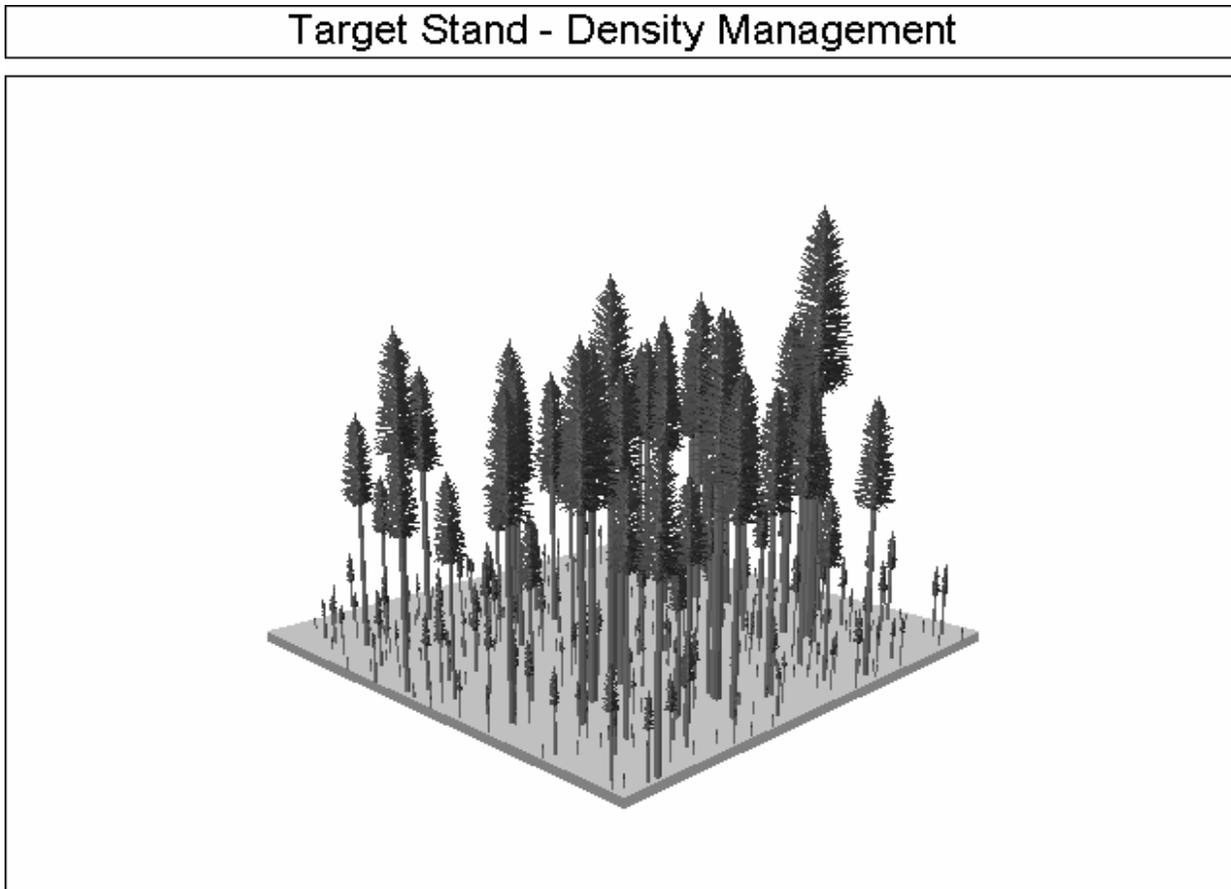
suppressed crown class trees and increasing the spacing of the intermediate and dominant/co-dominant crown classes. Remaining trees will have crown ratios greater than 35% and will be the better formed trees. Ponderosa pine, sugar pine, incense-cedar and Douglas-fir will make up the preferred leave species. Large (>20" dbh) healthy ponderosa and sugar pine will be favored over equally healthy Douglas-fir. The crowns of the retained pines should be full, with a minimum crown ratio of 35%, needles should be dark green, crown tops should be pointed (not rounded) and there should be no evidence of resin flow on the upper bole of sugar pine. The residual crown closure of these stands will range within 50-60%.

Large (>12"dbh) healthy hardwoods (madrone and black oak) will remain as a scattered stand component. Removal of competing trees will provide the necessary top light required for the continue growth of these trees.

Survey and manage species may occur within the stands. Where sites do occur; sites will be buffered and protected, these buffer patches will provide for additional within stand structural diversity.

All stage 1 and 2 snags >20"DBH will remain for wildlife, future coarse woody debris, and structural diversity.

Figure 2. Stand structure following density management. This is a visual reference only; results will vary from stand to stand.



YEAR	DENSITY MANAGEMENT TREATMENT
0	<p>Harvest</p> <ul style="list-style-type: none"> * Thin from below first, removing the suppressed component of the stand, followed by the thinning of the main canopy to reduce densities and to remove any trees that are insect or disease infected or otherwise declining (based upon crown ratio and form). Healthy conifer trees less than 8" dbh that are not in competition with healthy trees larger than 8" dbh will be thinned at an approximate 14' spacing (space off of existing leave trees). Madrone clumps would be cut or girdled to the largest stem, when not in direct competition with residual conifers. * Residual stocking will range from a relative density of 35-50+ and crown closures of 50-60%. * Favored leave species are ponderosa pine, sugar pine, incense-cedar and Douglas-fir. * Reserve ponderosa and sugar pine >20 inches DBH, to maintain genetic and structural diversity. * Use existing and widely spaced skid trails and directional falling to reduce impacts to the site and residual stands. * Reserve the largest hardwoods 12" dbh or greater, 2-4 per acre. * Heavy slash concentrations will be hand piled. * Slash all sprung, severely damaged, spindly crowned, low crown ratio (<40%) conifers and hardwoods between 1&7".
10-20	<p>Conduct stand exam to assess stand conditions. Evaluate the health of the stand for excess tree mortality, reduced radial growth and condition of large ponderosa and sugar pine to assure presence in the stands. A second thinning entry would likely occur to maintain tree vigor and species diversity.</p>
20-50	<p>Assess the stands for current objectives. Possible additional partial cut entries or regeneration harvest may be necessary.</p>

2. Regeneration Harvest (RH)

Three different regeneration silvicultural methods may be implemented, Structural Retention, Modified Even-aged and Modified Even-aged in a Connectivity Block. The target stand conditions for each of these methods are the same, except for the number of trees greater than 20 inches in diameter at breast height (dbh) that are left. Listed below are the number of trees > 20" dbh that are to be left.

- Structural Retention - 16-25 trees per acre > 20" dbh
- Modified Even-aged - 6-8 trees per acre > 20" dbh
- Modified Even-aged / Connectivity Block - 12-18 trees per acre > 20" dbh.

The O.I. units proposed for these treatments are listed in the marking guidelines.

a. Present Conditions

Alternative 2 follows ROD/RMP guidelines using stand age in determining the timing of regeneration harvests, forest stands would be managed using a 150-year area control rotation. The silvicultural treatments proposed in Alternative 3 are based upon stand conditions and landscape objectives, rather than stand age alone..

These forest stands have been tractor logged in the past. Selective harvesting was the primary silvicultural method applied. This resulted in stands developing multiple tree canopy layers. The overstory tree component is declining due to high stand density levels, root pathogens and tree senescence. Overstory tree species are primarily Douglas-fir with lesser amounts of white fir; the minor species include sugar pine, incense-cedar and ponderosa pine.

The shrub species present across most of these units consists of Oregon grape (dwarf and piper's), deerbrush ceanothus, hazel, oceanspray and vine maple common in the higher elevations. In most units, shrub cover is low to moderate, occurring in patches or as a scattered vegetative component. Hardwood species include madrone, and black oak. Generally the hardwoods are widely scattered or occur in small clumps and are a minor compositional component of the stands.

Natural regeneration (seedlings and saplings) of Douglas-fir, incense cedar and a lesser amount of white fir is present in most of these units, with density levels varying from stand to stand.

b. Target Stand - Regeneration Harvest (RH)

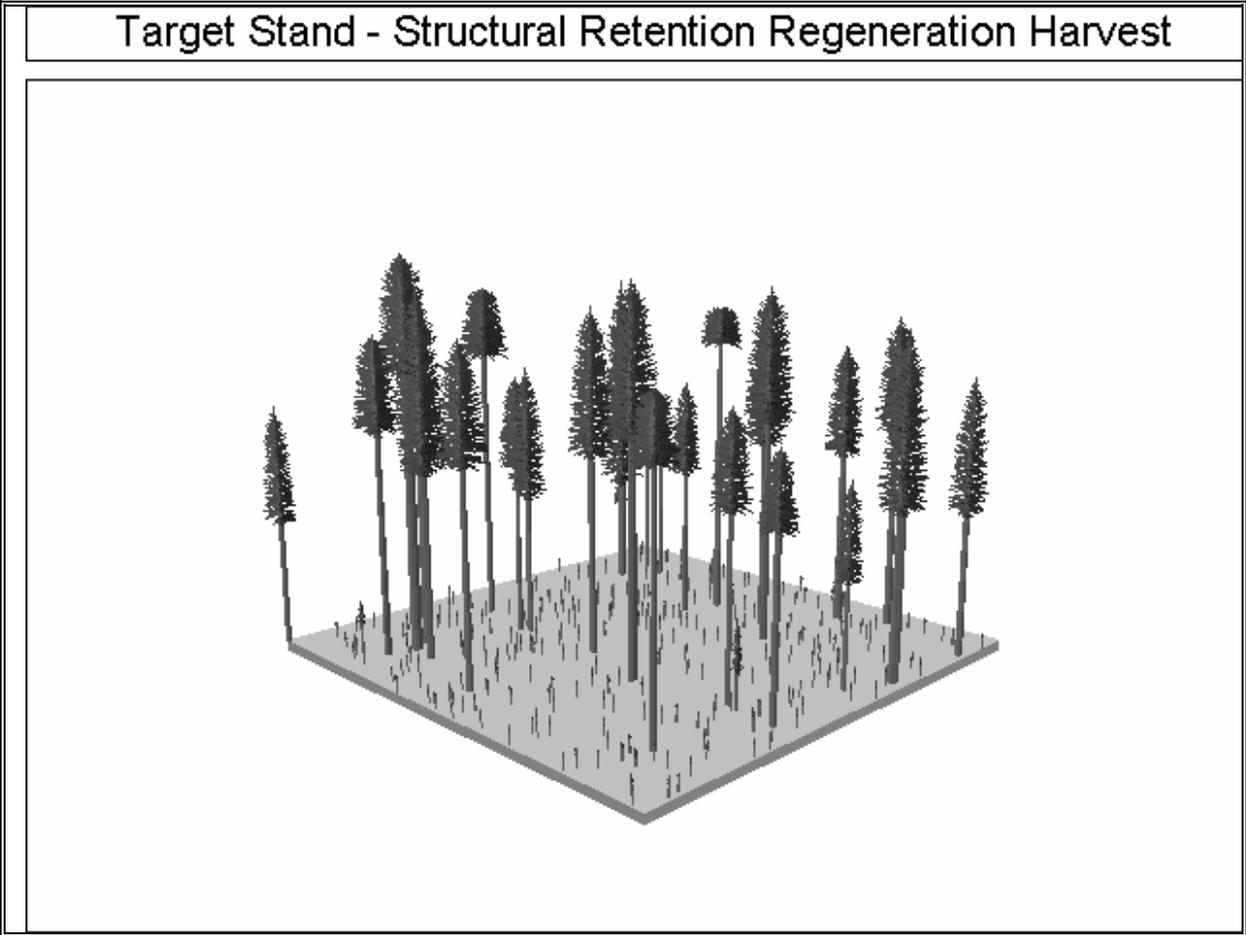
The minimum number of remaining large (>20"DBH), overstory green trees will vary from 6-25 trees per acre. Douglas-fir, sugar pine, ponderosa pine, incense-cedar and hardwood species will be the preferred leave species. In areas of laminated root rot, healthy co-dominant and dominant ponderosa pine, sugar pine, incense cedar and hardwood species would be favored over Douglas-fir when available. Leave trees will be the largest and full crowned, healthy trees.

Pre-harvest snags would remain and additional healthy or cull green trees >20inches DBH, will be reserved if needed to meet the required 1-2 wildlife snags per acre, or to meet coarse woody debris requirements. Two to four large hardwoods >12"DBH, per acre will be reserved for wildlife and stand diversity. Tree form (height and crown condition) will determine which hardwoods to leave .

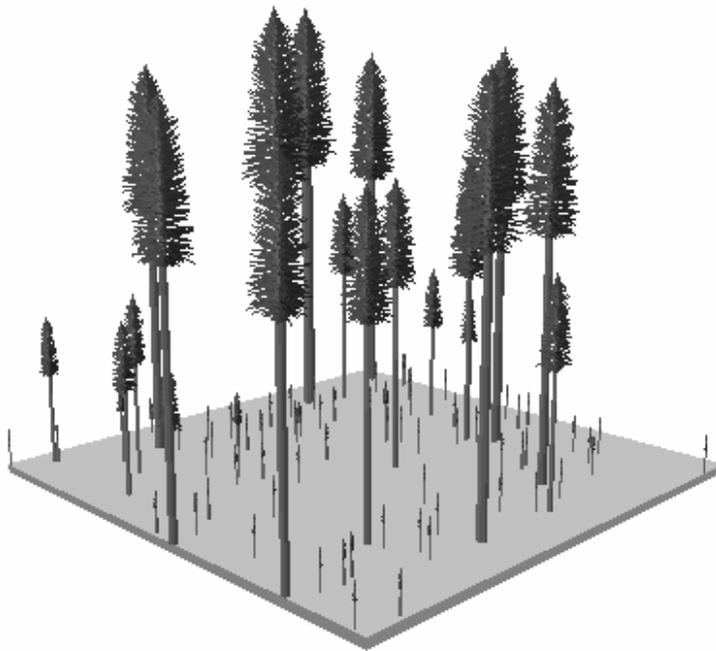
Survey and manage species may occur within the stands. Where sites do occur; sites will be buffered and protected, these buffer patches will provide for additional within stand structural diversity.

To prepare nonstocked sites for tree planting, logging slash will be piled and burned along with severed shrubs and regeneration with poor crowns. Piling will be accomplished by hand or excavator. Excavator piling would occur where side slopes are <30%. To promote species diversity within these units where planting is required, a mixture of Douglas-fir, resistant sugar pine, ponderosa pine and incense-cedar will be planted following site preparation activities. Plant approximately 300-500 trees per acre, species mix will be approximately, Douglas-fir 70%, sugar or ponderosa pine 20%, and incense-cedar 10%. In areas of laminated root rot the species mix would be altered towards low susceptibility species to reduce further effects of the root pathogen. The species mix would be approximately, 5-10% Douglas-fir, 70% ponderosa and sugar pine and 20% incense cedar (T33S-2E-33).

Figures 3&4. Stand structure following structural retention and modified even-aged regeneration harvest. These illustrations are a visual reference only; results will vary from stand to stand.



Target Stand - Modified Even-Aged Regeneration Harvest



REGENERATION HARVEST

YEAR	TREATMENT
0	<ul style="list-style-type: none"> * Harvest - Leave target number of green conifer trees/acre, >20"dbh and all vigorous ponderosa pine, incense cedar, sugar pine and hardwoods 8-20" dbh. * A minimum of 1.8 snags/acre (stage 1&2) and 120 linear feet coarse woody debris (decay class 1&2, 16" X 16') would be left. * Use widely spaced designated skid trails, directional falling and log length skidding to reduce site impacts. * Site preparation: Slash trees damaged from logging activities, 1-6". Leave all healthy unmerchantable trees. Brush and hardwoods are to be treated either by excavator removal or slashing. Excavator or hand pile brush and slash and burn. Limit piling of logging slash to pieces < 16" diameter. * Rip skid trails
0-1	<ul style="list-style-type: none"> * Plant with a mix of ponderosa pine, Douglas-fir, sugar pine and incense-cedar, modify planting mix in areas of laminated root rot (T32S-R2E-33).

	Apply appropriate maintenance (vexar tubing, mulching, shading, scalping, baiting) treatments to insure planting success.
1	* Conduct 1st year survival survey, assess need for supplemental planting or additional maintenance treatment.
3	* Conduct 3rd year survey, assess need for replanting and/or additional maintenance needs.
5	* Conduct 5th year stocking survey. Target stand will have a minimum of 280 well spaced trees per acre. Competing vegetation will have been controlled, with trees growing rapidly.
10	* Precommercial thin the understory if more than 400 trees per acre. Favor pine species, Douglas-fir and Incense-cedar. Favor ponderosa pine, sugar pine and incense cedar over Douglas-fir and white fir in laminated root rot areas. Thin to approximately 300 trees per acre
35	* Average diameter at breast height is 10", commercial thin if stand density is appropriate, otherwise delay until crown closure and competition reduces growth rates. Thin to approximately 200 trees per acre.
45-80	* Commercial thin if appropriate, favor leaving the pines, Douglas-fir and incense-cedar.
100+	* Assess stand and watershed conditions for possible regeneration harvest.

3. Selective Cut (SC)

The O.I. units proposed for this treatment is listed in the marking guidelines.

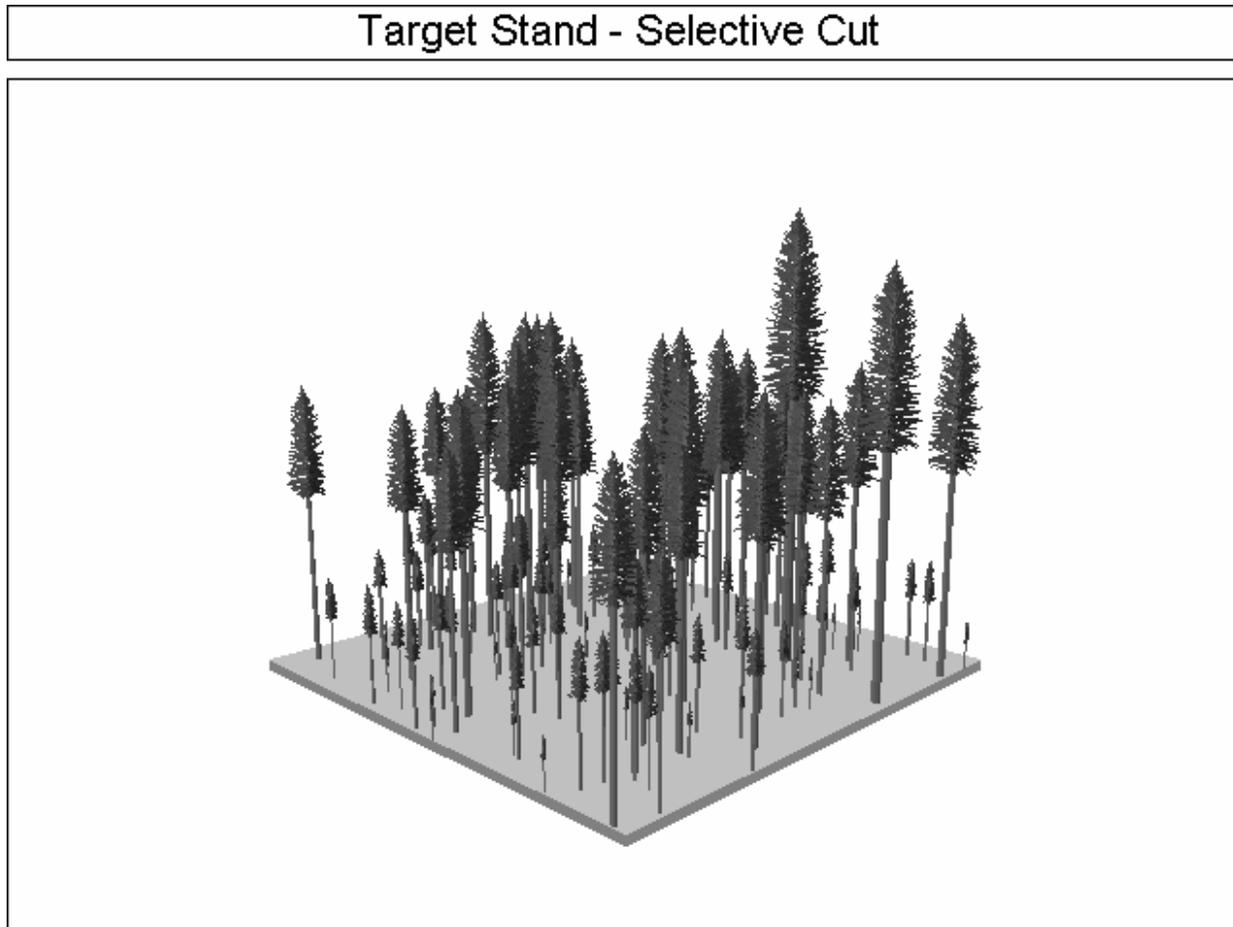
a. Present condition:

In the stands recommended for selective cut, a large percentage of the trees have good crown ratios and vigor; a smaller percentage of the trees are showing symptoms of decline (poor crown ratios, chlorotic thinning foliage or crown form is declining). Competition between trees for limited site resources is intense as stand densities are high. The average relative density for these stands is 83%. Past logging activities have created small canopy gaps that have resulted in stands with a variable stand structure. The tree species composition is a mixture of predominantly Douglas-fir with lesser amounts of ponderosa pine, sugar pine, incense cedar, black oak and madrone.

b. Target stand:

Following the harvest entry, these stands are composed of healthy trees of all species and diameter classes. Large healthy ponderosa pine have been retained to insure their continued presence in the stand. Species composition is dominated by Douglas-fir, followed by smaller amounts of ponderosa pine, sugar pine, incense cedar and large hardwoods. Vertical and biological diversity is present through the retention of trees of all ages and size classes. Survey and manage species may occur within the stands and where sites do occur patches of less than one acre will be buffered and protected. These patches will provide for additional within stand structural diversity. The estimated range of canopy closure is between 50-60%. Coarse woody debris (CWD) is present and provides conditions favorable for nutrient recycling, soil mycorrhizae, and the development of nitrogen fixing bacteria. Cull trees have been left to insure that a near-term "pulse" of CWD and snags will be available. Large (>12"dbh) healthy hardwoods (madrone and black oak) will remain as a scattered stand component. Removal of competing trees will provide the necessary top light required for the continue growth of these trees.

Figure 5. Stand structure following a selective cut. This is a visual reference only; results will vary from stand to stand.



YEAR	SELECTIVE CUT TREATMENT
0	<ul style="list-style-type: none"> * Initial harvest - Reduce stand densities by marking risk trees in all diameter classes, do not mark <i>any</i> trees 50" dbh or greater. Tree vigor as defined by crown form and crown condition, is the primary factor to be used in determining risk trees. Thin even-aged pockets where appropriate. * Use widely spaced designated skid trails, directional falling and log length skidding to reduce site impacts. * Treat logging slash by lopping and scattering heavy slash concentrations. * Slash all sprung or severely damaged conifers and hardwoods between 1&6"
10-20	<ul style="list-style-type: none"> * Conduct stand exam to assess stand conditions and to determine if any additional management treatments are needed.

IV. Monitoring

Implementation of the standard and guidelines in the Record of Decision (ROD) and management direction contained within the Medford District Resource Management Plan and Final Environmental Impact Statement (RMP/FEIS) require a monitoring system to insure effective on-the-ground results. The ROD states the following: "Monitoring is an essential component of natural resource management because it provides information on the relative success of management strategies. The implementation of these standards and guidelines will be monitored to ensure that management actions are meeting the objectives of the prescribed standards and guidelines, and that they will comply with laws and management policy. Monitoring will provide information to determine if the standards and guidelines are being followed (implementation monitoring), verify if they are achieving the desired results (effectiveness monitoring), and determine if underlying assumptions are sound (validation monitoring). Some effectiveness and most validation monitoring will be accomplished by formal research."

Monitoring of the proposed actions will follow the outline in the Medford District RMP/EIS, Volume II, Appendices 147-163. Monitoring will be specific to the land allocations and resources affected in the Lost Creek and Lower Big Butte Creek watershed sale area.

Monitoring should:

- Detect changes in ecological systems from both individual and cumulative management actions and natural events
- Provide a basis for natural resources policy decisions
- Provide standardized data
- Compile information systematically
- Link overall information management strategies for consistent implementation
- Ensure prompt analysis and application of data in the adaptive management process
- Distribute results in a timely manner

Monitoring begins with resource assessment and data collection which describes the existing conditions prior to management actions. Data collection is in the form of sampling which provides a representative description of the proposed treatment area. Stand exams were completed in the proposed sale area. Stand information was collected, using a comprehensive stand exam process. Within stands, a systematic sampling grid was used to establish plot centers. From the plot centers a variable plot and two nested fixed plots were used to record tree and site data.

This information is then used in a BLM stand exam program that provides a variety of analysis reports. These reports provide a description of stand characteristics and a detailed assessment of stand conditions and health.

Post harvest monitoring can then be implemented, using the pre-harvest stand information to determine if the objectives have been met.

Flounce Around Marking Guidelines

Summary of Treatment Objectives

Management Direction

The stands adjacent to Lost Creek Lake and Highway 62 are designated visual resource management (VRM) class II. Management activities within this designation “may be seen but should not attract the attention of the casual observer. Changes should repeat the basic elements of form, line color, texture, and scale found in the predominant natural features of the characteristic landscape”. Meeting this management guideline is the primary objective when marking in these stands. When in doubt, err on the conservative side.

Treatment Objectives

1. To reduce density levels towards the carrying capacity of the site. In second growth stands, to thin from below to redistribute growth to vigorous dominant and co-dominant trees. In selectively cut stands, remove low vigor trees across all diameter classes to reduce inter-tree competition while maintaining or promoting the development of large trees and multiple canopy layers.
2. To favor a return to the seral phase of the Douglas-fir and white fir plant series as a long term silvicultural approach to provide for sustainable forest conditions. Favored species should be the shade intolerant and intermediates, ponderosa pine, sugar pine, incense cedar, Douglas-fir and hardwood species.
3. To maintain healthy ponderosa pine and sugar pine as a stand and landscape component.
4. Maintain approximately 50-60% canopy closure in all density management and selectively cut stands. This range of canopy closure will minimize canopy openings, the growth of understory brush, maintain connectivity and provide a variety of plant and animal habitat across the landscape.
5. To regenerate stands with declining growth rates or deteriorating conditions and to prepare units for seedling establishment and growth by providing suitable site conditions for planting; within treatment areas retain coarse woody debris, snags and large green conifers for long term site productivity and biological legacies.

Selective Cut (SC)

1. Reducing stand densities, removing low vigor trees and retaining approximately 50-60% canopy closure, are the primary objectives for these stands.
 - Dependant upon the spatial arrangement of low vigor trees, canopy closure will vary across the stand.
 - Tree selection criteria should be based upon the retention of the desired basal area with tree vigor (risk factors) used as the primary aid in determining individual trees to mark. Refer to the attached low vigor and high risk of mortality guidelines. Ideally, trees selected for removal should be proportional to their presence within the stand, although this will not always be possible. For example, if the size class distribution within a stand is, 70% of the trees are 8- 20" dbh, 20% of the trees are 20-32" dbh and 10% of the trees are 32"dbh or greater, then the majority of the trees selected would be in the 8-20" size class with lesser amounts marked in the 20-32" size class and even fewer marked that are greater than 32" dbh.
 - The average residual basal area of treated stands will range between 140 to 180 square feet per acre. See below for the approximate residual basal area for each stand.

- Clumpiness of residual trees is okay, meeting the target basal area is more important than meeting a spacing requirement. Spatial and structural variability is a desired stand condition.
- Trees will be marked across all diameter classes. Minimize marking trees greater than 40" dbh and do not mark *any* trees 50" dbh or greater, regardless of condition.

2. Favor drought and fire tolerant tree species, such as ponderosa pine, sugar pine, incense cedar, Douglas-fir and hardwood species. Laminated root rot occurs occasionally within the sale area, specifically in stands above 3500 feet (32S-2E-33 & 33S-2E-4). In this area, white fir should be discriminated against because of its susceptibility to laminated root rot and also its low tolerance of fire and drought.

3. Large (>20" dbh) healthy ponderosa and sugar pine should be favored over equally healthy Douglas-fir. The crowns of the retained pines should be full, with a minimum crown ratio of 35%, needles should be dark green, crown tops should be pointed (not rounded) and there should be no evidence of resin flow on the upper bole of sugar pine. Pine species with poor crowns characterized by a ragged appearance as well as foliage which is bunchy and of poor color should be removed, do not retain.

4. Leave all hardwoods, greater than 12" dbh for species diversity, canopy layers and root disease resistance.

5. Leave all snags, stages 1-5.

6. Leave all coarse woody debris, decay classes 1-5.

7. Minimize the marking of large, >20" dbh, broken, fork top and deformed trees. Retain for plant and animal habitat, as well as future sources of coarse woody debris and snags.

Alternatives 2 & 4 -Selective Cut Units (target basal area):

32s-2e-33 OI 003 (160) 33s-2e-31 OI 007 (180-200) 33s-1e-01 OI 004 (140-160)
 33s-1e-11 OI 001 (140-160) 33s-1e-11 OI 008 (140-160) 33s-1e-35- OI 005 (160)

Alternatives 3 & 5 -Selective Cut Units (target basal area):

32s-2e-33 OI 003 (160) 33s-2e-04 OI 002 (160) 33s-2e-31 OI 007 (180-200)
 33s-1e-01 OI 003 (140) 33s-1e-01 OI 004 (140-160) 33s-1e-11 OI 001 (140-160)
 33s-1e-11 OI 008 (140-160) 33s-1e-35- OI 005 (160)

**** The stand data provided below is not absolute, rather it is an estimate based upon sampling. It is intended to provide a general description/measure of stand density, composition and structure. The recommendations for the treatment of logging slash may change following post harvest surveys ****

32s-2e-33 OI 003

Trees/acre <8" dbh: 308 (0-2: 250, 2-4: 28, 4-8: 30) Trees/acre >8" dbh: 89

Basal Area: 246 Sq ft Canopy Closure: 100 Aspect: E Relative Density Index: .83

Laminated root rot (LRR) is present within this unit and is affecting Douglas-fir and white fir. No discrete pockets are identifiable rather it occurs as a diffuse, widely occurring pathogen. Where possible stand densities and canopy closures should be maintained at higher levels to minimize potential wind throw adjacent to laminated root rot pockets.

- Along the east/west section line, a wet riparian area runs parallel to the section line on private ownership, the buffer has been flagged in yellow. The remaining area has scattered overstory trees with many areas containing Douglas-fir saplings 8 to 20 feet in height. The brush component is well established with dogwood and vine maple 10-15' in height. RX: Mark low vigor dominant overstory trees, leave any pre-dominant trees, 50" dbh or greater, regardless of condition. Excavator pile from skidtrails (logging slash and brush) and burn. Thin pockets of trees less than 8" dbh at 14X14' spacing. Plant holes with ponderosa pine, incense cedar and sugar pine, do not plant any Douglas-fir.
- In the northeast corner, riparian areas and their buffers reduce the available matrix acres to three small 2 acre patches. All buffer areas have been flagged. Treatment RX: SC, LS & HP concentrations & burn.

- Three additional treatment areas remain in this OI, refer to map. In these areas, a selective cut is prescribed to remove risk trees. On the east side of the main ridgeline maintain higher densities and crown closure to minimize wind throw potential. LS & HP concentrations & burn.

33s-2e-04 OI 002

The central part of this OI consists of many seeps, springs and riparian areas. This area has been buffered and flagged in yellow. Matrix areas remaining include, a small stand on the south end, a narrow strip above the riparian area and a block on the northern end. Additional springs are present and have been buffered with yellow flagging in the northern portion of the OI adjacent to the north/south ownership line. RX: SC, using an excavator and staying on existing skidtrails, remove and pile brush and logging slash in the northern block and burn. No treatment is necessary in the southern area other than lop and scatter.

33s-2e-31 OI 007

Trees/acre <8" dbh: 309 (0-2: 214, 2-4: 0, 4-8: 95) Trees/acre >8" dbh: 86

Basal Area: 211 Sq ft Canopy Closure: 93 Aspect: N Relative Density Index: .73

This unit contains an undesignated recreation site that is used heavily throughout the year. Maintain this area as a recreational site by removing only hazard & low vigor trees that would pose a safety hazard within the next five years. HP logging slash and burn.

33s-1e-1 OI 003

This section is a designated connectivity block. The objectives are to provide for habitat connectivity for old growth dependant and associated species by minimizing fragmentation of interior habitat and maintaining at least 25% of the section in late-successional conditions.

A riparian reserve divides OI 003 in the middle. The northern part contains two different stand structures.

1. Trees/acre <8" dbh: 991 (0-2: 382, 2-4: 306, 4-8: 305) Trees/acre >8" dbh: 120

Basal Area: 223 Sq ft Canopy Closure: 100 Aspect: SE Relative Density Index: .94

On the western ½, madrone 8-12" dbh and trees less than 8" are the dominant structural component, with scattered overstory trees present. RX: Slash all trees 7" dbh and less from under the drip-line of larger full crown overstory trees. Thin the remaining trees less than 8", space off of existing overstory leave trees. Spacing for trees 1-7" dbh should be approximately 14' apart. Leave trees should have good leader growth, (4"+) with at least 40% crown ratio and no chlorotic foliage. Madrone less than 8" should be slashed and madrone, 8"-16" girdled. LS & HP concentrations and burn.

2. Trees/acre <8" dbh: 300 (0-2: 229, 2-4: 57, 4-8: 14) Trees/acre >8" dbh: 73

Basal Area: 195 Sq ft Canopy Closure: 88 Aspect: SE Relative Density Index: .68

The eastern ½ contains a mature stand with occasional small DF reprod patches. RX: SC, LS & HP concentrations and burn.

The southern part of this OI is a mature stand with an occasional small DF reprod patch.

Trees/acre <8" dbh: 527(0-2: 412, 2-4: 46, 4-8: 69) Trees/acre >8" dbh: 87

Basal Area: 220 Sq ft Canopy Closure: 100 Aspect: NE Relative Density Index: .83

RX: SC, LS & HP concentrations and burn.

33s-1e-1 OI 004

This portion of the OI is on the west side of the 32s-1e-27 road. RX: Selectively cut declining overstory trees. After yarding, thin trees less than 8" and slash DF with spindly crowns and low crown ratios. Space off of existing leave trees, spacing for trees 1-7" dbh should be approximately 14' apart. Leave trees should have good leader growth, (4"+) with at least 40% crown ratio and no chlorotic foliage. HP or EX pile from skid trails used during logging.

33s-1e-11 OI 001

The stand has an open canopy with DF, and occasionally PP & SP. Pini conks are present in about 20% of DF. The overall crown condition of dominant and co-dominant trees is good. Scattered pockets that contain large trees should be thinned by removing suppressed and intermediate trees. RX: SC risk trees. Vigorous PP & SP should be favored; pines species should have full crowns with dark green foliage and minimal weak spots. Pine species with poor crowns characterized by a ragged appearance as well as foliage which is bunchy and of poor color should not be retained. Thin second growth pockets, slash DF with spindly crowns and low crown ratios. Space off of existing leave trees, spacing for trees 1-7" dbh should be approximately 14' apart. Leave trees should have good leader growth, (4"+) with at least 40% crown ratio and no chlorotic foliage. LS & HP concentrations near road and burn.

33s-1e-11 OI 008

RX: SC, thin pockets and precommercial thin pockets of trees less than 8" dbh, LS.

33s-1e-35-005

Trees/acre <8" dbh: 771 (0-2: 625 2-4: 63, 4-8: 83) Trees/acre >8" dbh: 138

Basal Area: 234 Sq ft Canopy Closure: 100 Aspect: N Relative Density Index: .94

This OI contains an older stand that is generally of low vigor. Within the unit there are rocky ridges and rock piles created from rock breaking away from a vertical wall on the south portion of the OI. A buffer from the upper meadow area extends into the OI. An Army Corps of Engineers survey monument is present near the eastern edge of OI. RX: Light ITM removing highest risk, precommercial thin 0-8" dbh, spacing off of leave trees at a 14' spacing. LS & HP concentrations and burn.

Density Management (DM)

1. Density reduction and the retention of approximately 50-60% canopy closure are the primary objectives for these stands. Thin from below in second growth stands/clumps, low vigor co-dominant or dominant trees may be removed for density reduction and if tree vigor is lower than adjacent trees.

- Stocking will be reduced to Relative Densities of 35-45%.
- Leave trees need to be dominant and co-dominant with the best crown ratios.
- In higher elevation stands, favor healthy ponderosa pine, sugar pine, Douglas-fir and incense cedar over white fir.
- Large (>20" dbh) healthy ponderosa and sugar pine should be favored over equally healthy Douglas-fir. The crowns of the retained pines should be full, with a minimum crown ratio of 35%, needles should be dark green, crown tops should be pointed (not rounded) and there should be no evidence of resin flow on the upper bole of sugar pine. Pine species with poor crowns characterized by a ragged appearance as well as foliage which is bunchy and of poor color should be removed, do not retain.
- Trees to be removed are in excess of wildlife, CWD and biological diversity needs.

2. Leave all large fire remnant trees >50" dbh, regardless of condition.

3. Leave all hardwoods

4. Leave all snags (stages 1-5)

Alternatives 2 & 4 -Density Management Units (relative density & target basal area):

33s-2e-03 003 (RD 40, 160)

33s-2e-05 003 (RD 45, 180)

33s-2e-08 005 (RD 40, 140)

33s-2e-09 002 (RD 35, 140)

33s-2e-17 001 (RD 40, 140)

33s-2e-19 004 (RD 35, 140)

33s-1e-01 004 (RD 35, 140)

33s-1e-23-779 (RD 40, 120)

33s-1e-23-005 (RD 45, 140)

33s-1e-27-003 (RD 40, 160)

33s-1e-11-010 (RD 35, 140)

33s-1e-35-006 (RD 40, 140)

33s-1e-35-007 (RD 40, 140)

33s-1e-35-012 (RD 35, 140)

Alternatives 3 & 5 - Density Management Units (relative density & target basal area):

33s-2e-03 003 (RD 40, 160)	33s-2e-05 003 (RD 45, 180)	33s-2e-08 005 (RD 40, 140)
33s-2e-09 002 (RD 35, 140)	33s-2e-17 001 (RD 40, 140)	33s-2e-19 004 (RD 35, 140)
33s-1e-01 004 (RD 35, 140)	33s-1e-23-779 (RD 40, 120)	33s-1e-23-005 (RD 45, 140)
33s-1e-27-003 (RD 40, 160)	33s-1e-11-010 (RD 35, 140)	33s-1e-35-006 (RD 40, 140)
33s-1e-35-007 (RD 40, 140)	33s-1e-35-008 (RD 35, 140)	33s-1e-35-012 (RD 35, 140)

Density Management Units

33s-2e-03-003

Trees/acre <8" dbh: 967 (0-2: 700, 2-4: 200, 4-8: 66) Trees/acre >8" dbh: 225
Basal Area: 307 Sq ft Canopy Closure: 100 Aspect: S Relative Density Index: 1.00
Stand structure is multi-layered, with high stand densities. RX: DM, favor healthy ponderosa and sugar pines where available. After yarding, thin trees less than 8" and slash DF with spindly crowns and low crown ratios. Space off of existing leave trees, spacing for trees 1-7" dbh should be approximately 14' apart. Leave trees should have good leader growth, (4"+) with at least 40% crown ratio and no chlorotic foliage. Riparian reserve yellow/white flagging extends across the road into the unit. Northern 1/3 of the OI is tractor ground, the southern 2/3 is cable. HP or EX pile from skid trails on tractor ground and hand pile the rest.

33s-2e-05-003

Trees/acre: 0 trees <8" dbh, Trees/acre >8" dbh: 128
Basal Area: 248 Sq ft Canopy Closure: 87 Aspect: E Relative Density Index: .67
Even-aged stand located on ridge-line between the Elk Creek and Lost Creek watersheds. RX: DM leaving at least 60% or higher canopy closure. The higher canopy closure will meet TSZ objectives as well as retain the necessary structure to minimize wind-throw potential. LS

33s-2e-08-005

Trees/acre <8" dbh: 423(0-2: 137, 2-4: 183, 4-8: 103) Trees/acre >8" dbh: 121
Basal Area: 225 Sq ft Canopy Closure: 100 Aspect: E Relative Density Index: .82
Adjacent to the proposed Flounce Rock environmental area, an old military trail crosses the southern tip of the OI, and needs to be buffered (the buffer distance is 50' on each side of the trail). A riparian reserve needs to be buffered in the northern end of the OI. RX: Immediately south of the riparian reserve is an area suitable for density management. In the middle 1/3 of the OI, a scattered overstory with a dense understory (less than 8") is present. Mark the risk trees and thin the understory at a 14'X14' spacing. The southern 1/3 is suitable for DM, HP & burn.

33s-2e-09-002

Trees/acre <8" dbh: 353 (0-2: 100, 2-4: 100, 4-8: 153) Trees/acre >8" dbh: 118
Basal Area: 221 Sq ft Canopy Closure: 99 Aspect: E Relative Density Index: .79
The old military trail runs along the western boundary of the OI and needs to be buffered., the buffer distance is 50' on each side of the trail. The OI contains 8" dbh+ pockets to treat, otherwise sapling to pole size thickets are present under a scattered overstory. A small "bowl", with a high-water table is present in the southeastern portion of the OI, wind-throw is common, minimize management activities (marking trees & logging skidtrails) within this area. RX: DM, treat the understory less than 8" throughout the OI, slash DF with spindly crowns and low crown ratios, space off of existing leave trees. Spacing for trees 1-7" dbh should be approximately 14' apart. Leave trees should have good leader growth, (4"+) with at least 40% crown ratio and no chlorotic foliage. HP or EX pile & burn.

33s-2e-17-001

Trees/acre <8" dbh: 673 (0-2: 286, 2-4: 229, 4-8: 157) Trees/acre >8" dbh: 149
Basal Area: 253 Sq ft Canopy Closure: 100 Aspect: S Relative Density Index: .98
Immediately south of the east/west ownership boundary is a home site development area. The OI is a

mix of stand conditions, containing pockets of 8" dbh+ trees and areas of trees less than 8" dbh. The primary treatment objective is to reduce the fire hazard adjacent to the home sites and environmental education area. The amount of trees greater than 8" to be removed will be low. RX: DM 8"+ pockets. Favor healthy dominant and co-dominant PP and IC. Treat trees less than 8" throughout the OI, slash DF with spindly crowns and low crown ratios. Space off of existing leave trees, spacing for trees 1-7" dbh should be approximately 14' apart. Leave trees should have good leader growth, (4"+) with at least 40% crown ratio and no chlorotic foliage. HP & burn.

33s-2e-19-004

Trees/acre <8" dbh: 567 (0-2: 271, 2-4: 83, 4-8: 213) Trees/acre >8" dbh: 169
Basal Area: 221 Sq ft Canopy Closure: 100 Aspect: N Relative Density Index: .86
This OI is part of a proposed recreation site named Seth Bullis and identified in the RMP. This management treatment will not alter the potential for recreation development in the future.

The OI is a mix of stand conditions, containing pockets of 8"+ trees and areas of trees less than 8". The OI has a couple of old dump sites that need to be flagged and avoided during management activities (See Craig Brown for a map). The access road to the Fire Glen campground passes through this OI and will provide access. RX: DM 8"+ pockets. Favor healthy pine species where available. Treat trees less than 8" throughout the OI, slash DF with spindly crowns and low crown ratios. Space off of existing leave trees, spacing for trees 1-7" dbh should be approximately 14' apart. Leave trees should have good leader growth, (4"+) with at least 40% crown ratio and no chlorotic foliage. HP & burn.

33s-1e-1-004

Trees/acre: 11 trees (4-8) <8" dbh, Trees per acres >8" dbh: 136
Basal Area: 318 Sq ft Canopy Closure: 100 Aspect: W Relative Density Index: .84
Riparian reserves have been flagged with yellow/white, one spring/seep need to be checked for a buffer, it is located near the north side of the unit. RX: DM, LS & HP concentrations & burn.

33s-1e-23-779

Trees/acre <8" dbh: 458 (0-2: 183, 2-4: 229, 4-8: 45) Trees/acre >8" dbh: 111
Basal Area: 183 Sq ft Canopy Closure: 90 Aspect: NE Relative Density Index: .70
Meadows are adjacent to the OI, also the Four Corners campground access road and campsite are within the OI. The eastern boundary of the unit should not extend beyond the bench and parking area. Two large pockets of trees exist on either side of the 33-1E-27 road, stand density should be reduced by removing suppressed and intermediate small diameter classes 8-20" dbh. Trees greater than 20" dbh and in excess of wildlife and future CWD needs should be removed only if exhibiting low vigor characteristics. Thin pockets of conifer reproduction, slash DF with spindly crowns and low crown ratios. Space off of existing leave trees, spacing for trees 1-7" dbh should be approximately 14' apart. Leave trees should have good leader growth, (4"+) with at least 40% crown ratio and no chlorotic foliage. HP & burn.

33s-1e-23-005

Trees/acre <8" dbh: 277 (0-2: 0, 2-4: 131, 4-8: 147) Trees/acre >8" dbh: 188
Basal Area: 234 Sq ft Canopy Closure: 100 Aspect: SE Relative Density Index: .82
Above the road, thin the 8-16" dbh conifer size classes, larger size classes may be removed if exhibiting low vigor characteristics. Thin pockets of conifer reproduction; slash DF with spindly crowns and low crown ratios. Space off of existing leave trees, spacing for trees 1-7" dbh should be approximately 14' apart. Leave trees should have good leader growth, (4"+) with at least 40% crown ratio and no chlorotic foliage. East of the 33-1E-27 road, there are 8"-20" dbh DF available for thinning, vigorous PP & SP should be favored. Pines species selected for retention should have full crowns with dark green foliage and minimal weak spots. Pine species with poor crowns characterized by a ragged appearance as well as foliage which is bunchy and of poor color should be removed. HP & burn.

33s-1e-27-003

Trees/acre <8" dbh: 229 (0-2: 57, 2-4: 57, 4-8: 115) Trees/acre >8" dbh: 113
Basal Area: 237 Sq ft Canopy Closure: 98 Aspect: N Relative Density Index: .78

This OI occupies a north aspect and is generally of good form and vigor. Density reduction by thinning trees less than 16" dbh would benefit the stand by reducing inter-tree competition, larger size classes may be removed if exhibiting low vigor characteristics. This OI is surrounded by withdrawn low site productivity lands, generally composed of oaks, manzanita, and varying amounts of Douglas-fir and lesser amounts of ponderosa pine & sugar pine. A trail that originated from the 33-1E-27 road defines the western and southwestern boundary of the OI, leave a 25' no cut buffer adjacent to the trail. The trail origin could not be located but it's ending portion is still intact. A meadow buffer may be necessary on the southern end of the OI.

LS/HP concentrations & burn.

33s-1e-11-010

Trees/acre <8" dbh: 275 (0-2: 183, 2-4: 92, 4-8: 0) Trees/acre >8" dbh: 75

Basal Area: 186 Sq ft Canopy Closure: 85 Aspect: N Relative Density Index: .65

This is a Douglas-fir stand with occasional madrone, and sugar pine the stand is mostly >8" dbh, with a light thinning of 8/10/12" dbh classes available. No PCT is necessary. The slope has experienced some movement, with some pistol butt Douglas-fir present. LS

33s-1e-35-006

Trees/acre <8" dbh: 332 (0-2: 229, 2-4: 92, 4-8: 12) Trees/acre >8" dbh: 97

Basal Area: 207 Sq ft Canopy Closure: 93 Aspect: W Relative Density Index: .73

Three issues affect the shape, size and potential management of this OI. 1). Viewpoint Mike trail is adjacent to the western side of the unit 2). A buffer from meadow above the OI extends into unit 3). A riparian reserve extends into the middle of the OI running east/west. Leave a 25' no cut buffer on either side of the trail. RX: DM, HP & burn.

33s-1e-35-007

Trees/acre <8" dbh: 478 (0-2: 240 2-4: 60, 4-8: 178) Trees/acre >8" dbh: 147

Basal Area: 266 Sq ft Canopy Closure: 100 Aspect: N Relative Density Index: .97

This OI contains a variety of stand structures, from areas containing small diameter classes, suitable for PCT, to areas containing even-aged pockets of 8" dbh+ trees. A scattered overstory of large pre-dominant trees is also common. Wildlife trees were previously flagged in southern portion of stand adjacent to old harvest unit, these trees are to be protected with a designated buffer. RX: DM, Vigorous PP & SP should be favored, pines species should have full crowns with dark green foliage and minimal weak spots. Pine species with poor crowns characterized by a ragged appearance as well as foliage which is bunchy and of poor color should not be retained. Thin pockets of conifer reproduction, slash DF with spindly crowns and low crown ratios. Space off of existing leave trees, spacing for trees 1-7" dbh should be approximately 14' apart. Leave trees should have good leader growth, (4"+) with at least 40% crown ratio and no chlorotic foliage. Trees greater than 20" dbh and in excess of wildlife and future CWD needs may be removed if exhibiting low vigor characteristics. Minimize marking trees > 40" dbh and do not mark any trees 50" dbh or greater, regardless of condition. LS/HP or EX pile logging slash concentrations and burn.

33s-1e-35-008

Trees/acre <8" dbh: 555 (0-2: 400, 2-4: 0, 4-8: 155) Trees/acre >8" dbh: 93

Basal Area: 217 Sq ft Canopy Closure: 100 Aspect: N Relative Density Index: .83

A small piece of this OI remains after the 300' meadow buffer has been applied. Thin pockets of conifer reproduction, slash DF with spindly crowns and low crown ratios. Space off of existing leave trees, spacing for trees 1-7" dbh should be approximately 14' apart. Leave trees should have good leader growth, (4"+) with at least 40% crown ratio and no chlorotic foliage.

RX: DM LS/ HP logging slash concentrations and burn.

33s-1e-35-012

Trees/acre <8" dbh: 114 (0-2: 0, 2-4: 0, 4-8: 114) Trees/acre >8" dbh: 134

Basal Area: 241 Sq ft Canopy Closure: 94 Aspect: N Relative Density Index: .74

This OI is a young even-aged predominantly Douglas-fir stand that has large black oak (24-32" dbh) as a scattered stand component (approximately 3/acre). When the black oak has a full and vigorous crown and disease free bole these trees should be retained for diversity by favoring them over conifers. RX: DM, LS/HP concentrations & burn.

Modified even-aged – Regeneration Harvest (RH)

The minimum requirements are:

1. 1.8 wildlife trees/acre.
2. 120 linear feet of CWD.
3. 6-8 green conifers/acre, >20" dbh (proportionally representing the total range of tree sizes >20").

These are minimum levels, where additional healthy green trees are available they should be left.

Determination of leave and take trees should be based upon tree vigor (live crown ratio and crown form) and as opposed to the strict implementation of the 6-8 leave tree guideline. Let tree condition dictate where and how many trees are left. Leave trees should have the following attributes: a). Low susceptibility to wind, snow and ice damage, measured by a height to diameter ratio of 70 or below b). Crown ratio >35% with a healthy crown, dark foliage, dense needles c). Disease free d). Favor healthy seral species, ponderosa pine, sugar pine, incense cedar, where possible.

4. All healthy ponderosa pine, Douglas-fir, incense cedar, sugar pine and hardwoods regardless of size should be left (<1"-20"dbh). These trees should have the following attributes: a). crown ratios 35% b). healthy foliage. c). disease and insect free.

5. Retain all large hardwoods, >12" dbh.

6. Units do not have to be uniform in appearance; diversity, patchiness is desirable.

Alternatives 2 & 4 - Modified even-aged- Regeneration harvest units: 33S-1E-35-008 & 33S-1E-35-012N.

Alternatives 3 & 5 - Modified even-aged – Regeneration harvest unit: 33S-1E-35-012N.

33s-1e-35-012

Trees/acre <8" dbh: 210(0-2: 76, 2-4: 76, 4-8: 57) Trees/acre >8" dbh: 107

Basal Area: 250 Sq ft Canopy Closure: 100 Aspect: N Relative Density Index: .80

Approximately 6 acres in size. RX: RH 6-8TPA > 20" dbh. EX pile logging slash/brush and burn, plant.

33s-1e-35-008

Trees/acre <8" dbh: 555 (0-2: 400, 2-4: 0, 4-8: 155) Trees/acre >8" dbh: 93

Basal Area: 217 Sq ft Canopy Closure: 100 Aspect: N Relative Density Index: .83

A small piece of this OI remains after the 300' meadow buffer has been applied. Thin pockets of conifer reproduction, slash DF with spindly crowns and low crown ratios. Space off of existing leave trees, spacing for trees 1-7" dbh should be approximately 14' apart. Leave trees should have good leader growth, (4"+) with at least 40% crown ratio and no chlorotic foliage.

RX: RH 6-8 TPA > 20"dbh. EX pile logging slash concentrations and burn.

Connectivity Block – Regeneration Harvest (RH)

The minimum requirements are:

1. 1.8 wildlife trees/acre.
2. 120 linear feet of CWD.
3. 12-18 green conifers/acre, >20" dbh (proportionally representing the total range of tree sizes >20").

These are minimum levels, where additional healthy green trees are available they should be left.

Determination of leave and take trees should be based upon tree vigor (live crown ratio and crown form)

and as opposed to the strict implementation of the 12-18 leave tree guideline. Let tree condition dictate where and how many trees are left. Leave trees should have the following attributes: a). Low susceptibility to wind, snow and ice damage, measured by a height to diameter ratio of 70 or below b). Crown ratio >35% with a healthy crown, dark foliage, dense needles c). Disease free d). Favor healthy seral species, ponderosa pine, sugar pine, incense cedar, where possible.

4. All healthy ponderosa pine, Douglas-fir, incense cedar, sugar pine and hardwoods regardless of size should be left (<1"-20"dbh). These trees should have the following attributes: a). crown ratios 35% b). healthy foliage. c). disease and insect free.

5. Retain all large hardwoods, >12" dbh.

6. Units do not have to be uniform in appearance; diversity, patchiness is desirable.

Alternatives 2 & 4 – Connectivity Block - Regeneration harvest unit: 33S-1E-1- 003.

Alternatives 3 & 5 – Connectivity Block – Regeneration harvest unit: none

33s-1e-1 OI 003

This section is a designated connectivity block. The objectives are to provide for habitat connectivity for old growth dependant and associated species by minimizing fragmentation of interior habitat and maintaining at least 25% of the section in late-successional conditions.

A riparian reserve divides OI 003 in the middle. The northern part contains two different stand structures.

1. Trees/acre <8" dbh: 991 (0-2: 382, 2-4: 306, 4-8: 305) Trees/acre >8" dbh: 120

Basal Area: 223 Sq ft Canopy Closure: 100 Aspect: SE Relative Density Index: .94

On the western ½, madrone 8-12"dbh and trees less than 8" are the dominant structural component, with scattered overstory trees present. RX: Slash all trees 7" dbh and less from under the drip-line of larger full crown overstory trees. Thin the remaining trees less than 8", space off of existing overstory leave trees.

Spacing for trees 1-7" dbh should be approximately 14' apart. Leave trees should have good leader growth, (4"+) with at least 40% crown ratio and no chlorotic foliage. Madrone less than 8" should be slashed and madrone, 8"-16" girdled. LS & HP concentrations and burn.

2. Trees/acre <8" dbh: 300 (0-2: 229, 2-4: 57, 4-8: 14) Trees/acre >8" dbh: 73

Basal Area: 195 Sq ft Canopy Closure: 88 Aspect: SE Relative Density Index: .68

The eastern ½ contains a mature stand with occasional small DF reprod patches. RX: RH, EX pile slash and burn.

The southern part of this OI is a mature stand with an occasional small DF reprod patch.

Trees/acre <8" dbh: 527(0-2: 412, 2-4: 46, 4-8: 69) Trees/acre >8" dbh: 87

Basal Area: 220 Sq ft Canopy Closure: 100 Aspect: NE Relative Density Index: .83

RX: RH, EX pile slash and burn on tractor portion of unit and LS & HP concentrations and burn on cable portion.

Structural Retention – Regeneration Harvest (RH)

The minimum requirements are:

1. 1.8 wildlife trees/acre.

2. 120 linear feet of CWD.

3. 16-25 green conifers/acre, >20" dbh (proportionally representing the total range of tree sizes >20").

These are minimum levels, where additional healthy green trees are available they should be left.

Determination of leave and take trees should be based upon tree/crown vigor as opposed to the strict implementation of the 16-25 leave tree guideline. Let tree condition dictate where and how many trees are left. Leave trees should have the following attributes: a). Low susceptibility to wind, snow and ice damage, measured by a height to diameter ratio of 70 or below b). Crown ratio >35% with a healthy crown, dark

- foliage, dense needles c). Disease free (specifically mistletoe free Douglas-fir) d). Favor healthy seral species, ponderosa pine, sugar pine, incense cedar, where possible.
4. All healthy ponderosa pine, Douglas-fir, incense cedar, sugar pine and hardwoods regardless of size should be left (<1"-20"dbh). These trees should have the following attributes: a). crown ratios 35% b). healthy foliage c). disease and insect free.
 5. Retain all large hardwoods, >12" dbh.
 6. Tree diameter should not be the deciding factor for marking a tree, crown vigor should.
 7. Units do not have to be uniform in appearance; diversity, patchiness is desirable.

Alternatives 2 & 4 - Structural Retention - Regeneration harvest unit: 33S-2E-4-002, 32S-2E-33-003.

Alternatives 3 & 5 - Structural Retention - Regeneration harvest unit: 32S-2E-33-003

32s-2e-33 OI 003, approximately 12 acres.

Trees/acre <8" dbh: 302 (0-2: 286, 4-8: 16)

Trees/acre >8" dbh: 90

Basal Area: 254 Sq ft Canopy Closure: 100 Aspect: E Relative Density Index: .85

Laminated root rot (LRR) is present throughout this stand. RX: SGFMA RH leaving 16-25 tpa, favoring incense cedar and any pines available. Plant with PP, SP, IC and protect any established hardwoods. EX pile & burn.

33s-2e-04 OI 002

The central part of this OI consists of many seeps, springs and riparian areas. This area has been buffered and flagged in yellow. Matrix areas remaining include, a small stand on the south end, a narrow strip above the riparian area and a block on the northern end. Additional springs are present and have been buffered with yellow flagging in the northern portion of the OI adjacent to the north/south ownership line. RX: SGFMA RH leaving 16-25 tpa, favoring incense cedar and any pines available. Plant with PP, SP, IC and protect any established hardwoods. EX pile & burn.

Estimate the average diameter of potential leave trees and determine the desired spacing in feet by referring to the table below. Follow the basal area and spacing table as closely as possible. Once the area has been marked verify the leave basal area using a relaskop or prism, adjust basal area as necessary. As the average diameter changes spacing will also change holding stand density constant.

RELATIVE DENSITY - 35%		
AVERAGE LEAVE TREE DBH	LEAVE TREE BASAL AREA	LEAVE TREE SPACING
8"	99	12' X 12'
10"	111	15' X 15'
12"	121	17' X 17'
14"	131	19' X 19'
16"	140	21' X 21'
18"	148	23' X 23'
20"	157	25' X 25'
22"	164	26' X 26'
24"	171	28' X 28'
26"	178	30' X 30'
28"	185	32' X 32'
30"	191	33' X 33'

RELATIVE DENSITY - 40%		
AVERAGE LEAVE TREE DBH	LEAVE TREE BASAL AREA	LEAVE TREE SPACING
8"	113	12' X 12'
10"	126	14' X 14'
12"	139	16' X 16'
14"	150	18' X 18'
16"	160	20' X 20'
18"	170	21' X 21'
20"	179	23' X 23'
22"	188	25' X 25'
24"	196	26' X 26'
26"	204	28' X 28'
28"	212	30' X 30'
30"	219	31' X 31'

.RELATIVE DENSITY - 45%		
AVERAGE LEAVE TREE DBH	LEAVE TREE BASAL AREA	LEAVE TREE SPACING
8"	127	11' X 11'
10"	142	13' X 13'
12"	156	15' X 15'
14"	168	17' X 17'
16"	180	18' X 18'
18"	191	20' X 20'
20"	201	22' X 22'
22"	211	23' X 23'
24"	220	25' X 25'
26"	229	26' X 26'
28"	238	28' X 28'
30"	246	29' X 29'

Characteristics of low vigor trees

1. Low vigor trees

a. Low vigor, ponderosa pine trees are defined as those trees meeting the following criteria:

- * Crowns are ragged and thin.
- * Foliage in parts of crown thin bunchy, or unhealthy, needles average to shorter than average in length.
- * Needle color poor to fair.
- * Some twigs or branches lack foliage and some twigs or branches are fading or dead.
- * Localized weaken parts of crowns present.
- * Crown top is rounded, and the crown width is narrow or flat on one or more sides.

b. Low vigor Douglas-fir and white fir trees are defined as:

- * Crown has thin appearance when viewed against the sky.
- * Short needle length
- * Needle color very poor, yellowish.
- * Dead or dying twigs or branches in the crown forming holes, sparse and ragged crown appearance.
- * Poor crown ratio.
- * Mistletoe infected.

c. Trees affected by root rot, visual characteristics are:

- * groups of trees affected, with trees showing variable levels of decline.
- * trees have reduced height growth, look at top of trees for reduced increment growth.
- * yellow foliage, decline of the crown is from the top to the bottom.
- * distress cone crop.

- * bark beetles sometimes present because of the stressed trees.
- * windthrow trees common, wood at the base of the downed trees is soft and stringy or has begun to delaminate.

2. Insect infested trees

Douglas-fir and white fir trees undergoing attack from Douglas-fir bark beetle, as identified by red boring dust present in bark crevices or on the ground near the base of the tree. Foliage is thinning and yellowish in appearance. Borers typically begin their attack in the top of the tree, then may spread to the lower bole. Pitch streamers may also be present on the mid to upper bole.

Ponderosa pine trees undergoing current attack from western pine beetle or red turpentine beetle. Pitch tubes should contain reddish/brown granular frass. Pitch tubes clear in color indicate the tree has been successful in expelling the beetle, these trees should not be marked if otherwise healthy.

All snags and coarse woody debris will be maintained as they presently occur; snags that are a safety hazard may be felled but will be left on site.

Appendix F Fisheries

The dominant water body in the proposed project area is Lost Creek Reservoir. This reservoir is created by the William L. Jess Dam which was built by the Army Corps of Engineers to provide for flood control and other social benefits in the Rogue River basin. Lost Creek reservoir has a total storage capacity of 465,000 acre-feet, is 10 miles long and covers 3,426 acres at full pool (ODFW 1994). Major streams within the proposed project area include the Middle Fork of the Rogue River, Rogue River immediately below the dam, and the first mile of Big Butte Creek. Other notable streams are Lost Creek (north), Blue Gulch, Knighten Creek, Hole In the Ground Creek, and Skookum Creek.

Fish Species and Distribution

A variety of resident and anadromous fish species occupy the proposed project area. Native fish species that utilize the Lost Creek Reservoir, the Middle Fork of the Rogue River, and tributary creeks to the reservoir include resident rainbow trout (*Oncorhynchus mykiss*), resident cutthroat trout (*O. clarki*), Klamath smallscale sucker (*Catostomus rimiculus*), and sculpin (*Cottus* spp.). Introduced species in the reservoir include brook trout (*Salvelinus fontinalis*), brown trout (*Salvelinus trutta*), smallmouth bass (*Micropterus dolomieu*), largemouth bass (*Micropterus salmoides*), brown bullhead (*Ictalurus nebulosus*), bluegill (*Lepomis macrochirus*), and black crappie (*Pomoxis nigromaculatus*). Native fish species that utilize the upper Rogue River and lower Big Butte Creek include coho salmon (*O. kisutch*), chinook salmon (*O. tshawytscha*), summer and winter steelhead trout (*O. mykiss*), resident rainbow trout (*O. mykiss*), coastal cutthroat trout (*O. clarki*), Pacific lamprey (*Lampetra tridentata*), brook lamprey (*L. richardsoni*), speckled dace (*Rhinichthys osculus*), white sturgeon (*Acipenser transmontanus*), Klamath smallscale sucker (*Catostomus rimiculus*), and sculpin (*Cottus* spp.). Coho salmon are listed as a threatened species under the Endangered Species Act (ESA) of 1973. Pacific lamprey is a State of Oregon designated sensitive species because there is evidence of their populations declining throughout the Pacific Northwest, however there is little known information related to lamprey populations in the Rogue River.

Historically, anadromous fish utilized the Rogue River and its tributaries several miles above the William L. Jess Dam. When the dam was constructed in 1972, this historic range was eliminated. Native fish species such as cutthroat trout, rainbow trout, sculpins and Klamath smallscale suckers still remain within the proposed project area above the dam. Cutthroat trout have been observed in 3 streams that flow into Lost Creek Reservoir: Lost Creek North, a small un-named tributary, and in Skookum Creek in sections 33S - 1E - 1, 11, and 12 and in sections 33S -2E - 3 & 10 (see map). This represents approximately 3.5 miles of resident trout habitat in the proposed project area and approximately 1.5 miles is located on BLM administered lands, excluding the reservoir. Sculpin distribution is currently unknown. Klamath smallscale suckers have been documented only in Lost Creek Reservoir. All the above species utilize the Rogue River and the lower section of Big Butte Creek within the project area.

Aquatic Habitat Status

Aquatic habitat surveys were completed on Lost Creek and Skookum Creek on BLM administered lands in 1997. The sections on private lands were not surveyed. Surveys indicated that overall the aquatic habitat is in fair condition in these sections based on quantities of gravel and cobble substrate, pool habitat, and riparian condition. (Table 1). Some areas had high

levels of fines and had low quantities of large wood pieces. The increased fine sediment levels are likely from a combination of roads and natural erosion.

Table 1. Key Habitat Elements (Interpreted from 1997 Stream Surveys).

	Pool Quality	% Gravel	Riparian Condition	Large Woody Material	Overall Condition
Lost Cr. (north)	Fair	Good	Fair	Fair	Fair
Skookum Cr.	Fair	Good	Fair	Poor	Fair

Riparian surveys were completed in 1997 on both streams. Overall, Lost Creek North was classified as functioning at risk based on high sediment loads and active slumping. Skookum Creek was classified as functioning at risk based on lack of large wood on the upper portion and was properly functioning on the lower section. These surveys were completed on BLM administered lands only.

Aquatic Habitat Trend

No surveys have been completed since 1997 but habitat conditions are believed to maintain or improve on surveyed reaches over the past 6 years. A fire occurred in the upper watershed on the western side last year. The streams within the fire were first order streams and there is very little chance the fire will contribute sediment to fish bearing streams. No projects or activities have occurred in the watershed since 1997.

Environmental Consequences

No Action Alternative, Alternative 1

a) Direct and Indirect Effects

The No Action alternative would have no direct effect on fish or fish habitat. With no on-the-ground actions, there would be no direct improvements or damage to fish and other members of the aquatic biotic community or to aquatic habitat.

Indirectly, the vegetation within the Riparian Reserve would continue to develop and provide the long-term (50-100+ years) necessary elements for healthy aquatic ecosystems such as instream large wood, shade, and bank stability. Vegetation in non-recovered openings within the transient snow zone (TSZ) would continue to develop. This would be expected to reduce the risk of increasing the magnitude and frequency of peak flow events.

Additionally, this alternative could indirectly contribute to stream sedimentation into streams like Lost Creek North and Skookum Creeks by delaying or foregoing road decommissioning, road

renovation and road maintenance. Road densities, which are fine sediment sources, would remain unacceptably high within the watershed. Problem culverts that contribute sediment into the stream system will continue be chronic source for fine sediment. The problems would be expected to have indirect, adverse effects for fisheries and aquatic resources through habitat degradation over the short and long-term (>5 years or until the road had fully stabilized).

There would be a higher threat of a severe intensity stand replacing fire from the continued fire exclusion and the lack of fuel reduction treatments in the project area. Such a fire could lead to levels of soil erosion and sedimentation even higher than those existing, further damaging fish habitat. It could also temporarily eliminate stream shade and large wood recruitment.

b) Short-term Uses vs. Long-term Productivity

Maintaining the current Riparian Reserve vegetation throughout the proposed project area would continue to provide the long-term necessary elements for healthy aquatic ecosystems. Maintaining the current vegetation within the transient snow zone (TSZ) throughout the proposed project area would continue to allow hydrologic recovery in these areas. This would be anticipated to help maintain or increase the current productivity of fisheries and aquatic resources over the long-term (50-100+ years).

By delaying or foregoing road decommissioning, road renovation and road maintenance in the short-term (1-5 years), a higher risk of stream sedimentation from roads is likely in the short-term. This would be anticipated to maintain or increase current levels of stream sedimentation. This would be expected to adversely effect aquatic habitat and potentially the productivity of fisheries and aquatic resources in the watershed over the long-term.

c) Irreversible or Irretrievable Commitments of Resources

None anticipated.

d) Cumulative Effects

A beneficial cumulative effect to fish and aquatic resources should result due to increased sizes and amounts of large wood contributed to the aquatic ecosystem as the Riparian Reserve vegetation develops and delivers material to the streams over the long-term. This alternative would also be expected to cumulatively reduce the amount of non-recovered openings within the TSZ. As a result, a cumulative reduction in altering the magnitude and frequency of peak flow events should occur.

Alternatively foregoing road decommissioning, road maintenance or renovation opportunities could lead to an increase in stream sedimentation levels from surface erosion or mass failure of cuts and fills. Foregoing these opportunities would be expected to have an adverse cumulative effect on fisheries and aquatic resources through potential cumulative increases in stream sediment levels. Some roads may stabilize over time as they revegetate. However, this may take many decades to achieve. This is also dependent upon private activities and their use and maintenance of the transportation system in the watershed.

- e) Determination of Effects on Northern California/ Southern Oregon Coho Salmon (SO/NC) Coho Salmon, SO/NC Coho Critical Habitat, and Essential Fish Habitat (EFH) from Implementation of Alternative 1.

No Effect

The “no action” alternative would have no positive or negative effect to SO/NC coho salmon, coho Critical Habitat or EFH. With no ground disturbing activity occurring, existing conditions would continue and there would be no physical changes that would negatively impact downstream conditions and coho habitat.

Effects of Implementing Alternative 2

- a) Direct and Indirect Effects

No direct effects to fish and aquatic habitat are expected from the proposed timber harvest and fuel treatment activities. Indirect effects which may result from timber harvest could include increased runoff due to reduced canopy cover and soil compaction by heavy equipment operation. This could result in a change in the magnitude or timing of flows in adjacent streams. However, impacts to aquatic resources from the project are expected to be inconsequential and immeasurable because of the project design and small size of the proposed project. Most harvest units are designated for density management or select cut treatment, which would leave a residual canopy closure of 40-60%. This would be expected to maintain the current hydrologic functioning condition of the upland areas. The regeneration harvest would not be expected to measurably effect flows within the project area because of the small number of acres proposed for treatment. This proposed alternative would increase the amount of TSZ openings by 69 acres, which would have a negligible effect to peak flows.

All proposed fuels treatments in riparian zones will be completed by hand using handheld equipment so there would be no soil compaction. The riparian treatment consist of pile burning, which has a very low risk of contributing sediment to streams because the burned areas are small (4 foot diameter) and are surrounded by unburned areas that trap any sediment created. In addition, a 50 foot no-treatment buffer would be maintained on all streams above and below the dam to further reduce the chances of sediment reaching streams. In riparian areas below the dam that are inner gorged draws steeper than 35% slope, they will have full buffer widths maintained. The width of these buffers is based upon the steepness of the adjacent slopes and the presence of true riparian vegetation species. A combination of the light treatments in the riparian areas with 50 feet no treatment buffers will alleviate sediment delivery into adjacent streams. There would be no measurable reduction in shade on these streams resulting from the proposed fuels treatments by maintaining the 50 feet buffer. No heavy mechanical treatment will occur within Riparian Reserves and equipment will only be allowed to travel in these areas on those roads which are already in existence. No mechanical fuels treatments will occur anywhere below Lost Creek Dam that drain into the Rogue River or Big Butte Creek. Aquatic resources should benefit from over-stocked riparian areas being thinned out which will allow them to produce a future large wood supply quicker. Also, there will be a reduced risk of wildfire which can significantly increase sediment levels.

Indirectly, the vegetation within the Riparian Reserves would continue to develop and provide the long-term necessary elements for healthy aquatic ecosystems. In areas where the Riparian Reserve is currently in an early to mid-successional condition it would be expected that late-successional characteristics would develop at a naturally slow rate. This would be expected to increase the length of time before the beneficial effects of a late-successional forest condition in these areas would be expressed in fish-bearing stream reaches. The areas designated for riparian fuel treatments would be expected to achieve late-successional structural characteristics within a shorter time period by reducing the competition for light and nutrients within these stands. Thinning would also indirectly result in increased resistance to a stand-replacement fire.

The proposed road decommissioning would be expected to restore more natural hydrologic flow paths and reduce the risk of erosion and subsequent stream sedimentation from these roads. This would be expected to indirectly benefit fish within the watershed by reducing potential road generated fine sediment. Indirectly, fish and aquatic resources could be negatively effected from low level, localized increases to baseline stream turbidity and sediment levels in the short-term (<1 year). These increases would not be expected to persist beyond one year after completion of the proposed activities.

The proposed road maintenance, road renovation and operator spur construction would be expected to have indirect, negative effects to fish and aquatic habitat from localized increases to baseline stream turbidity and sediment levels in the short-term (<1 year). These increases would not be expected to persist beyond one year after completion of the proposed activities. Conversely, the proposed road maintenance and road renovation actions would be expected to indirectly benefit fish within the watershed by reducing the risk of sedimentation to streams from these roads in the short and long-term (>5 years).

Replacement and/or removal of culverts could directly impact the aquatic system by disturbing stream banks, vegetation, and substrate. Although these actions could result in short-term increases in turbidity and sedimentation, they would result in a direct beneficial effect on the aquatic system in the long term by restoring hydrologic connectivity and function. Replacement of undersized culverts would also indirectly benefit the aquatic system by reducing the risk of road failure during high flow events.

b) Short-term Uses vs. Long-term Productivity

No effect to the long-term productivity of fisheries and aquatic resources are anticipated from the proposed timber harvest, fuels treatments, road renovation, decommissioning, and culvert replacement. Maintaining the current Riparian Reserve design and allowing this vegetation to develop throughout the proposed project area would continue to provide the long-term necessary elements for healthy aquatic ecosystems. Maintaining 40-60% or greater canopy closure in proposed harvest units would be an insignificant increase of openings within the TSZ. The timber harvest area within the TSZ is very small throughout the proposed project area and would not effect the hydrologic regime of the area. This would be anticipated to maintain or increase current productivity of fisheries and aquatic resources over the long-term. Peak flows are expected to not change because of the small area being opened.

Short-term (1 -5 years) increases to baseline stream sediment levels are anticipated to occur from road maintenance, renovation, decommissioning, and replacement and/or removal of culverts under the proposed timber sale. However, it is anticipated that an overall reduction in the risk to increasing baseline stream sediment levels would occur due to maintenance, renovation, and decommissioning of the road system. Subsequently, it is anticipated the current productivity of fisheries and aquatic resources in the watershed would be maintained or increased over the long-term.

c) Irreversible or Irretrievable Commitments of Resources

None anticipated.

d) Cumulative Effects

Cumulative effects to the watershed from the proposed timber harvest and fuels treatments would include the reduction in vegetative cover and possible related short-term effects on flows. The recovery of vegetative cover within the grasslands and brush fields through the fuels treatments is expected to occur within a year or two at the most, with an overall benefit provided to the watershed by reducing risks of catastrophic fire. By reducing vegetative cover through these treatments it is expected to provide a long-term benefit to aquatic resources by reducing risks of sedimentation resulting from extreme fire behavior on the landscape.

No adverse cumulative effects to fish and aquatic resources are anticipated from the proposed timber harvest. Additionally, this alternative would allow the vegetation within the Riparian Reserve to continue to develop and contribute a long term supply of large wood to the aquatic ecosystem. This is anticipated to result in a beneficial cumulative effect to fish and aquatic resources due to increased habitat quality and quantity. This proposed alternative would only increase the amount of TSZ openings by 69 acres which would have an insignificant effect to peak flows for the project area.

The proposed project could have a negative effect on fisheries and aquatic resources in the short-term by adding to current levels of stream sediment from road maintenance, renovation, and decommissioning. Conversely, a long-term, beneficial, cumulative effect to fish and aquatic resources is anticipated from reducing potential road generated fine sediment by completing road maintenance, renovation, and decommissioning.

e) Determination of Effects on Southern Oregon/Northern California Coho Salmon, SO/NC Coho Salmon Critical Habitat, and EFH from Implementation of Alternative 2.

Timber Harvest

May Effect, Not Likely to Adversely Effect

It would be expected that some degradation of aquatic habitat may occur due to potential short-term sediment delivery to streams resulting from the planned timber harvest units occurring below Lost Creek Dam. However, by following the appropriate PDFs these effects will be minimized and are not expected to result in “take” of listed fish species. The units that occur above the dam are a “not effect” due to any sediment created being trapped by the reservoir. Alternative 2 is considered “not likely to adversely effect” SO/NC coho salmon (listed

“threatened”), SO/NC Critical Habitat, or EFH. Informal consultation with the National Oceanic and Atmospheric Administration (NOAA) Fisheries Service was initiated in January 1998 for SO/NC coho salmon and SO/NC Critical Habitat. A Letter Of Concurrence was received from NOAA Fisheries Service in April 1998. Essential Fish Habitat consultation is not necessary because this project went through ESA consultation before it was a requirement and that the project was determined to “not likely to adversely effect” EFH.

Fuels Treatments

No Effect

This project is determined to have “No Affect” on listed coho salmon, their Critical Habitat, or EFH. The project is “No Affect” because of the project design features, Riparian Reserve stipulations and there are no delivery mechanisms for sediment to reach coho habitat. These measures will ensure that no fine sediments, flow problems or other potentially harmful physical changes will negatively impact SO/NC coho salmon, Critical Habitat, or EFH.

Effects From Implementing Alternative 3

a) Direct and Indirect Effects

No direct effects to fish and aquatic habitat are expected from the proposed timber harvest and fuels treatment activities. Indirect effects which may result from timber harvest could include increased runoff due to reduced canopy cover and soil compaction by heavy equipment operation.

This could result in a change in the magnitude or timing of flows in adjacent streams. However, impacts to peak flows are expected to be less than in Alternative 2 because there will be less regeneration harvest and more selective cut harvest. The few acres of regeneration harvest would not be expected to measurably affect flows within the project area because of the extremely small number of acres proposed for treatment. Most harvest units are designated for density management or select cut treatment which would leave a residual canopy closure of 40-60%. This would be expected to maintain the current hydrologic functioning condition of the upland areas. This proposed alternative would increase the amount of TSZ openings by 12 acres, which would have less than a negligible effect to peak flows.

Same effects from the proposed fuels treatments as Alternative 2.

Same effects on the vegetation within the Riparian Reserves as Alternative 2.

The proposed road decommissioning, road maintenance, road renovation, culvert replacement and/or removal, and operator spur construction would be the same as Alternative 2.

b) Short-term Uses vs. Long-term Productivity

Same effects as Alternative 2.

c) Irreversible or Irretrievable Commitments of Resources

None anticipated.

d) Cumulative Effects

Same effects as Alternative 2.

e) Determination of Effects on Southern Oregon/Northern California Coho Salmon, SO/NC Coho Salmon Critical Habitat, and EFH from Implementation of Alternative 3.

Timber Harvest

May Effect, Not Likely to Adversely Effect

The effects of this alternative would be identical to those already identified in Alternative 2 because the treatments occurring below the dam that may impact SO/NC coho are the same. Informal consultation with the National Oceanic and Atmospheric Administration (NOAA) Fisheries Service was initiated in January 1998 for SO/NC coho salmon and SO/NC Critical Habitat. A Letter Of Concurrence was received from NOAA Fisheries Service in April 1998. Essential Fish Habitat was not part of consultation prior to September 27, 2001 which was when the timber sale portion was consulted on and so it is not included in this document.

Fuels Treatments

No Effect

The effects of this alternative would be identical to those already identified in Alternative 2 because the treatments occurring below the dam are the same.

Effects From Implementing Alternative 4

a) Direct and Indirect Effects

Same effects from timber harvest as Alternative 2.

There are no direct effects to fish or aquatic resources expected from the proposed fuels treatments in Alternative 4. The proposed fuels treatments in riparian zones are the same for all alternatives, so impacts will be the same. This alternative differs from Alternatives 2 & 3 by having no mechanical fuels treatments occurring in the uplands above the dam. With the buffers outlined in the PDFs, there would be no measurable reduction in shade on streams resulting from the proposed fuels treatments. Indirectly, fish and aquatic resources above the dam are expected to not be negatively effected from the fuels treatments because there will be no ground compaction and shade levels will stay the same. Conversely, aquatic resources should benefit from over stocked riparian areas being thinned out which will allow them to produce a future large wood supply quicker. Also, there will be a reduced risk of wildfire which can significantly increase sediment levels.

Same effects on vegetation in the Riparian Reserves as Alternative 2.

The proposed road decommissioning, road maintenance, road renovation, culvert replacement and/or removal, and operator spur construction would be the same as Alternative 2.

b) Short-term Uses vs. Long-term Productivity

Same effects as Alternative 2.

c) Irreversible or Irretrievable Commitments of Resources

None anticipated.

d) Cumulative Effects

Same cumulative effects as Alternative 2.

e) Determination of Effects on Southern Oregon/Northern California Coho Salmon, SO/NC Coho Salmon Critical Habitat, and EFH from Implementation of Alternative 4.

Timber Harvest

May Effect, Not Likely to Adversely Effect

The effects of this alternative would be identical to those already identified in Alternative 2 because the treatments occurring below the dam that may impact SO/NC coho are the same. Informal consultation with the National Oceanic and Atmospheric Administration (NOAA) Fisheries Service was initiated in January 1998 for SO/NC coho salmon and SO/NC Critical Habitat. A Letter Of Concurrence was received from NOAA Fisheries Service in April 1998.

Fuels Treatments

No Effect

The effects of this alternative would be identical to those already identified in Alternative 2 because the treatments occurring below the dam are the same.

Effects of Implementing Action Alternative 5

a) Direct and Indirect Effects

Same effects from timber harvest as Alternative 3.

Same effects from fuels treatments as Alternative 4.

Same effects on vegetation in the Riparian Reserves as Alternative 2.

The proposed road decommissioning, road maintenance, road renovation, culvert replacement and/or removal, and operator spur construction would be the same as Alternative 2.

b) Short-term Uses vs. Long-term Productivity

Same effects as Alternative 2.

c) Irreversible or Irretrievable Commitments of Resources

None anticipated.

d) Cumulative Effects

Same cumulative effects as Alternative 2.

e) Determination of Effects on Southern Oregon/Northern California Coho Salmon, SO/NC Coho Salmon Critical Habitat, and EFH from Implementation of Alternative 5.

Timber Harvest

May Effect, Not Likely to Adversely Effect

The effects of this alternative would be identical to those already identified in Alternative 2 because the treatments occurring below the dam that may impact SO/NC coho are the same. Informal consultation with the National Oceanic and Atmospheric Administration (NOAA) Fisheries Service was initiated in January 1998 for SO/NC coho salmon and SO/NC Critical Habitat. A Letter Of Concurrence was received from NOAA Fisheries Service in April 1998.

Fuels Treatments

No Effect

The effects of this alternative would be identical to those already identified in Alternative 2 because the treatments occurring below the dam are the same.

Appendix G

Fire Regime and Condition Class Models



Open ponderosa pine stand maintained by frequent low-severity fire, is dominated by large trees. Stand is resilient to disturbances such as insects and disease outbreaks. (CC1) Figure 11



Selective logging in ponderosa pine stands progressively removed the larger trees. Without periodic fire, forest openings filled with thickets of smaller understorey trees. (CC2) Figure 13



The dense thickets of understorey trees eventually become sufficiently large enough to allow fire spread into the ponderosa pine crown. These thickets are also highly drought-prone. (CC3) Figure 15

← **Fire Condition Class 1** →

For the most part, fire regimes in this Fire Condition Class (CC1) are within historical ranges. Thus, the risk of losing key ecosystem components from the occurrence of fire remains relatively low. Maintenance management such as prescribed fire, mechanical treatments, or preventing the invasion of non-native weeds, is required to prevent these lands from becoming degraded.

← →

← **Fire Condition Class 2** →

Fire regimes on these lands (CC2) have been moderately altered from their historical range by either increased or decreased fire frequency. A moderate risk of losing key ecosystem components has been identified in these lands. To restore their historical fire regimes, these lands may require some level of restoration through prescribed fire, mechanical or chemical treatments, and the subsequent reintroduction of native plants.

← →

← **Fire Condition Class 3** →

These lands (CC3) have been significantly altered from their historical range. Because fire regimes have been extensively altered, risk of losing key ecosystem components from fire is high. Consequently, these lands verge on the greatest risk of ecological collapse. To restore their historical fire regimes—before prescribed fire can be utilized to manage fuel or obtain other desired benefits—these lands may require multiple mechanical or chemical restoration treatments, or reseeded.

← →



Wyoming big sagebrush type with considerable diversity is generally more resilient to disturbance and provides habitat for a great number of species. (CC1) Figure 12



Wyoming big sagebrush type where fire has been excluded for an extended period has reduced diversity and provides habitat for fewer species. The site is also vulnerable to future cheatgrass invasion and to wildland fire. (CC2) Figure 14



Rangeland sites entirely dominated by cheatgrass—unlike the native vegetation that formerly occupied this site—are highly vulnerable to fast-moving, higher-intensity wildfires. (CC3) Figure 16

Fire Regime and Condition Class

Registration Code Test Project Code flounce Project ID 2003 Sampling Date 5/24/2003 Examiner Name Pence
 Landscape Project Name Flounce Around Area 21400 Acres Lat Long

PVC #	Strata Code	BpLU	Life-form	Species	Local BpLU	Land-form	Slope Class	Insolation Class	Elevation Low	Elevation High	Strata Ref %Comp	Ref Freq	Cur Intvl	Severity Matri						
1	first	OKCA	CF	PIPO	QUGA	CECU	FECA	CHAP3	VAL	MOD	HIGH	2000	3500F	35	17	100	25	90		
2	SECOND	DFIR	CF	PSME	PIPO	RHDI	XETE	DFIR1	VAL	MOD	LOW	2000	3500F	65	60	125	50	95		
											Total									100

Comments
COMBINED T HE 2 FIRE REGIMES

Fire Regime and Condition Class - Biophysical Stratification

Reg Code Project Code Project ID Sampling Date Strata Num
 Code Strata Name Date Strata Comp
 BpLU Lifeform Indicator Species QUGA FECA CHAP3 VAL
 Ave Slope Insoil Class Low Elev High Elev Feet Long
 Natl Fire Freq Curr Fire Interval Nat Fire Severity Curr Fire Severity
 Ref Veg-Fuel Class Comp Source Cur Veg-Fuel Class Comp Source Native Amer Burn B/C Class Break D/E Class Break

Characteristic Vegetation-Fuel Classes

Veg-Fuel Class	Lifeform	Size	Closure	Dominant Species	Fire Beha Fuel Photo ID Fuel Mode	Ref % Comp	Curr % Comp	Similarity	Diff	Risk	Abundance			
A	SHRB	LOWS	40	FECA	CECU	RHDI	5	10	0	0	-100.0	HIGH	RARE	
B	CONT	POLE	40	PIPO	QUGA	CECU	FECA	6	25	13	-31.6	MOD	RARE	
C	CONT	MEDM	30	PIPO	QUGA	CECU	FECA	9	7	3	-40.0	MOD	RARE	
D	CONT	LARG	30	PIPO	QUGA	CECU	FECA	2	45	0	-100.0	HIGH	RARE	
E	CONT	LARG	60	PIPO	QUGA	PSME	FECA	10	13	84	13	73.2	MOD	HIGH
Totals								100	100	29				

Current Veg-Fuel Departure Current Frequency Departure Current Frequency-Severity Departure
 Veg-Fuel Condition Class Current Severity Departure Frequency-Severity Condition Class
 Strata Condition Class

Fire Regime and Condition Class - Biophysical Stratification

Reg Code Project Code Project ID Sampling Date Strata Num
 Code Strata Name Date Strata Comp
 BpLU Lifeform Indicator Species PIPO XETE Landform
 Ave Slope Insoil Class Low Elev High Elev Feet Long
 Natl Fire Freq Curr Fire Interval Nat Fire Severity Curr Fire Severity
 Ref Veg-Fuel Class Comp Source Cur Veg-Fuel Class Comp Source Native Amer Burn B/C Class Break D/E Class Break

Characteristic Vegetation-Fuel Classes

Veg-Fuel Class	Upper Layer Majority	Lifeform	Size	Closure	Dominant Species	Fire Beha Fuel Photo ID	Fuel Monte	Ref % Comp	Curr % Comp	Similarity	Diff	Risk	Abundance	
A	SHRB	LOWH	40	XETE	RHDI	CECU	5	10	0	0	-100.0	HIGH	RARE	
B	CONT	POLE	40	PIPO	PSME	RHDI	XETE	20	5	5	-60.0	MOD	RARE	
C	CONT	MEDM	30	PIPO	PSME	RHDI	XETE	5	20	5	60.0	MOD	HIGH	
D	CONT	LARG	30	PSME	PIPO	RHDI	XETE	50	5	5	-81.8	HIGH	RARE	
E	CONT	LARG	60	PSME	PIPO	RHDI	XETE	15	70	15	64.7	MOD	HIGH	
Totals								100	100	30				

Current Veg-Fuel Departure Current Frequency Departure Current Frequency-Severity Departure
 Veg-Fuel Condition Class Current Severity Departure Frequency-Severity Condition Class
 Strata Condition Class

Fire Regime and Condition Class - Biophysical Stratification

Reg Code Test Project Code Flounce Project ID 2003 Sampling Date 5/2/2003 Strata Num 1
 Code first Strata Name First Strata Date 5/2/2003 Strata Comp 100
 BpLU OKCA Liform CF Indicator Species PIPO QUGA CECU FECA Local BpLU CHAP3 Landform VAL
 Ave Slope MOD Insol Class HIGH Low Elev 2000 High Elev 3500 Feet Lat Long
 Natl Fire Freq 17 Curr Fire Interval 100 Nat Fire Severity 25 Curr Fire Severity 90
 Ref Veg-Fuel Class Comp Source B Cur Veg-Fuel Class Comp Source R Native Amer Burn W B/C Class Break 40 D/E Class Break 40

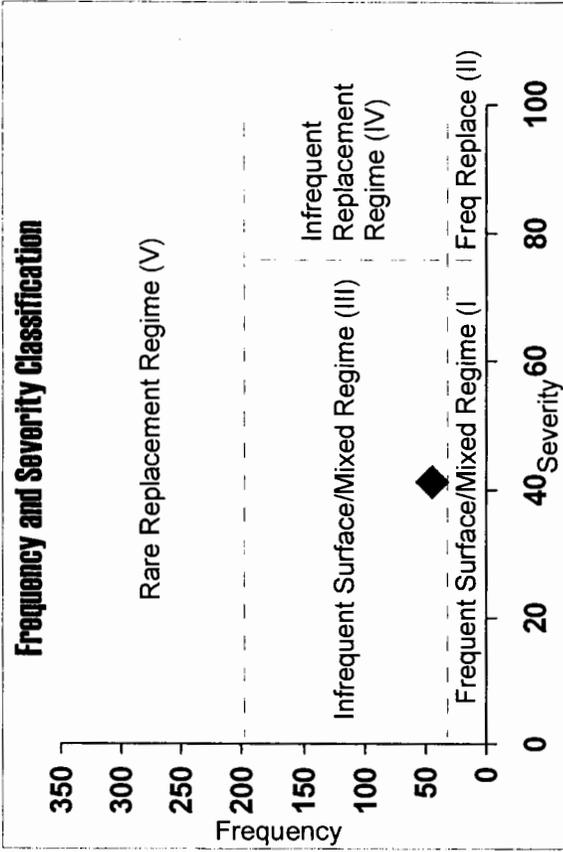
Characteristic Vegetation-Fuel Classes

VegFuel Class	Upper Layer Majority	Dominant Species	Fire Beha Fuel Photo ID	Ref % Comp	Curr % Comp	Similarity	Diff	Risk	Abundance
A	SHRB LOWS	40 FECA CECU RHDI	5	10	0	0	-100.0	HIGH	RARE
B	CONT POLE	40 PIPO QUGA CECU FECA	6	25	13	13	-31.6	MOD	RARE
C	CONT MEDM	30 PIPO QUGA CECU FECA	9	7	3	3	-40.0	MOD	RARE
D	CONT LARG	30 PIPO QUGA CECU FECA	2	45	0	0	-100.0	HIGH	RARE
E	CONT LARG	60 PIPO QUGA PSME CECU	10	13	84	13	73.2	MOD	HIGH
Totals				100	100	29			

Current Veg-Fuel Departure 71 Current Frequency Departure 83 Current Frequency-Severity Departure 78
 Veg-Fuel Condition Class 3 (67-100%) Current Severity Departure 72 Frequency-Severity Condition Class 3 (67-100%)
 Strata Condition Class 3 (67-100%)

Fire Regime and Condition Class - Natural Fire Regime Summary

PVG #	Average Natural Fire Frequency	Strata Composition (%)	Natural Fire Frequency	Average Natural Fire Severity	Strata Composition (%)	Natural Severity
1	17	35	6	25	35	9
2	60	65	39	50	65	33
Sum		100	45		100	41



Project Natural (Historical) Fire Frequency:

Weighted Mean Fire Frequency: 45 years
 Fire Frequency Class: Infrequent (35-200)

Project Natural (Historical) Fire Severity:

Weighted Mean Upper Layer Severity Frequency: 41.3%
 Fire Severity Class: Mixed (>25% and <=75%)

Project Natural Fire Regime Group:

III - Infrequent Mixed and Surface

Fire Regime and Condition Class - Summary

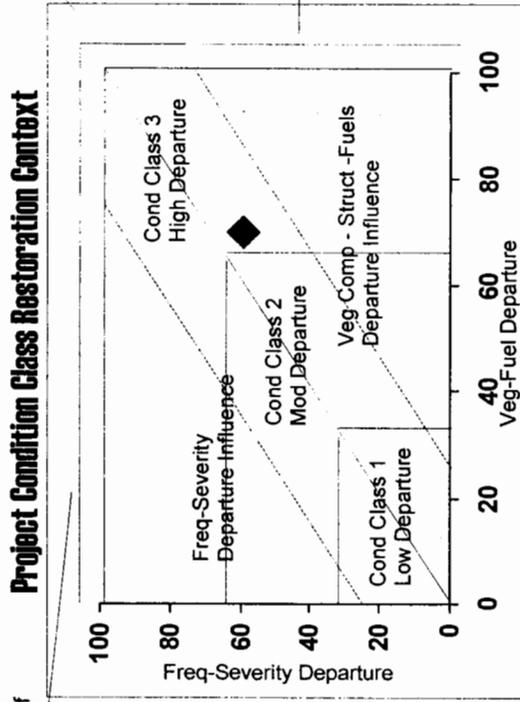
PVG #	Veg-Fuel Departure	Strata Composition (%)	Veg-Fuel Departure	Freq-Seviority Departure	Strata Composition (%)	Freq-Seviority Departure
1	71	35	25	78	35	27
2	70	65	46	50	65	32
Sum		100	70		100	59
Class			3			2

Restoration of fire effects

Restoration of fire effects, vegetation composition, structure, and fuels

Restoration of fire effects

Project Fire Regime Condition Class: 3 (67-100%)



Fire Regime and Condition Class

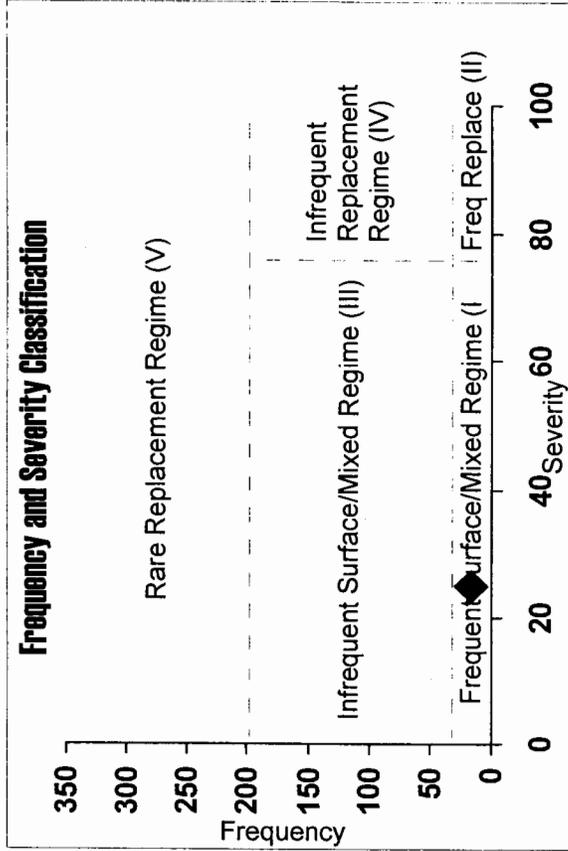
Registration Code Test Project Code Flounce Project ID 2003 Sampling Date 5/2/2003 Examiner Name Pence

Landscape Project Name Flounce Around Area 7500 Acres Lat Long

PVE #	Strata Code	BpLU	Life form	Species	Local BpLU	Land- form	Shape Class	Insolation Class	Elevation Low	Elevation High	Strata %Comp	Ref Freq	Cur Intvl	Cur Severity				
1	first	OKCA	CF	PIPO	QUGA	CECU	FECA	CHAP3	VAL	MOD	HIGH	3500	F	100	17	100	25	90
Total												100						

Fire Regime and Condition Class - Natural Fire Regime Summary

PVG #	Average Natural Fire Frequency	Strata Composition (%)	Natural Fire Frequency	Average Natural Fire Severity	Strata Composition (%)	Natural Severity
1	17	100	17	25	100	25
Sum		100	17		100	25



Project Natural (Historical) Fire Frequency:
 Weighted Mean Fire Frequency: 17 years
 Fire Frequency Class: Frequent (0-35)

Project Natural (Historical) Fire Severity:
 Weighted Mean Upper Layer Severity Frequency: 25%
 Fire Severity Class: Surface (<= 25%)

Project Natural Fire Regime Group:
 I - Frequent Surface and Mixed

Fire Regime and Condition Class - Summary

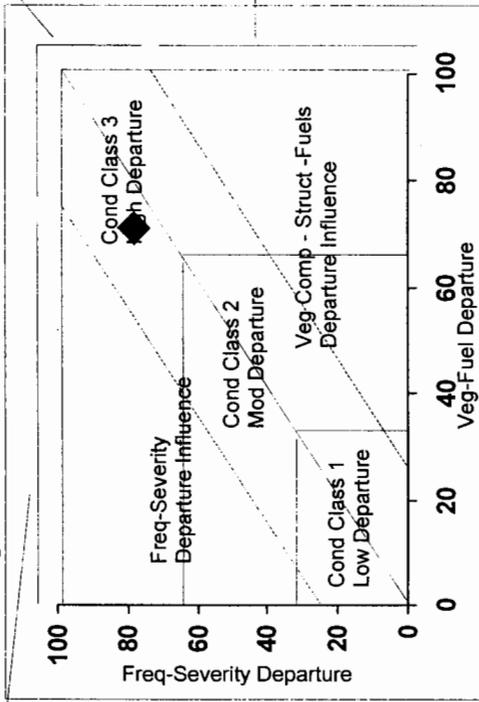
PVC #	Veg-Fuel Departure	Strata Composition (%)	Veg-Fuel Departure	Freq-Severity Departure	Strata Composition (%)	Freq-Severity Departure
1	71	100	71	78	100	78
Sum		100	71		100	78
Class			3			3

Restoration of fire effects, vegetation composition, structure, and fuels

Restoration of fire effects

Project Fire Regime Condition Class: 3 (67-100%)

Project Condition Class Restoration Context



Restoration of vegetation, structure and fuels

Fire Regime and Condition Class

Registration Code Project Code Project ID Sampling Date Examiner Name

Landscape Project Name Area Acres Lat Long

PVC #	Strata Code	Epl.U	Life-form	Species	Local Epl.U	Land-Form	Slope Class	Insolation Class	Elevation Low	Elevation High	Strata % Comp	Ref Freq	Cur Intvl	Severity Matr				
1	FIRST	DFIR	CF	PSME	PIPO	RHDI	XETE	DFIR1	VAL	MOD	LOW	3200	F	100	60	125	50	95
												Total	100					

Fire Regime and Condition Class - Biophysical Stratification

Reg Code Project Code Project ID Sampling Date Strata Num
 Code Strata Name Date Strata Comp
 BpLU Lifeform Indicator Species PIPO XETE DFIR1 VAL
 Ave Slope Insoil Class Low Elev High Elev Feet Long
 Natl Fire Freq Curr Fire Interval Nat Fire Severity Curr Fire Severity
 Ref Veg-Fuel Class Comp Source Cur Veg-Fuel Class Comp Source Native Amer Burn B/C Class Break D/E Class Break

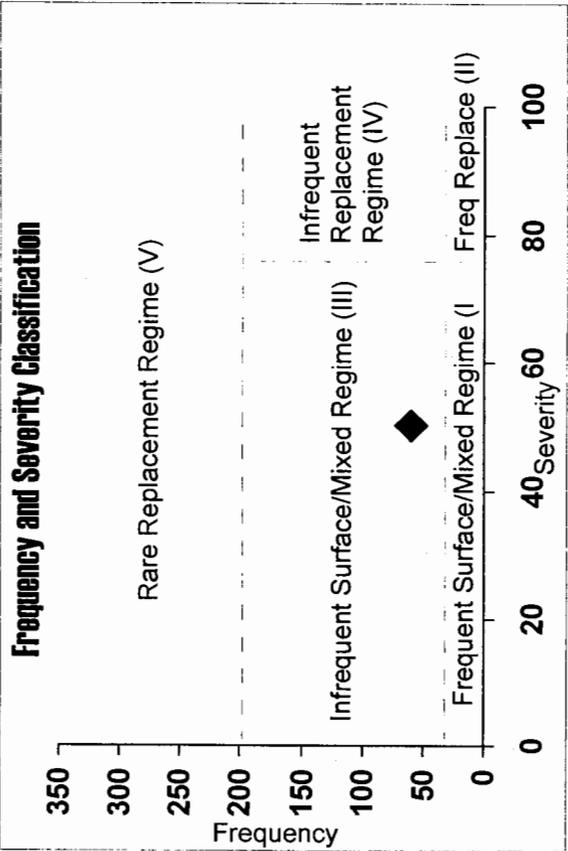
Characteristic Vegetation-Fuel Classes

VegFuel Class	Upper Layer Majority	Dominant Species	Fire Beha Fuel Photo ID	Ref % Comp	Curr % Comp	Similarity	Diff	Risk	Abundance
A	SHRB LOWH 40	XETE RHD1 CECU	5	10	0	0	-100.0	HIGH	RARE
B	CONT POLE 40	PIPO PSME RHD1 XETE	6	20	5	5	-60.0	MOD	RARE
C	CONT MEDM 30	PIPO PSME RHD1 XETE	9	5	20	5	60.0	MOD	HIGH
D	CONT LARG 30	PSME PIPO RHD1 XETE	8	50	5	5	-81.8	HIGH	RARE
E	CONT LARG 60	PSME PIPO RHD1 XETE	10	15	70	15	64.7	MOD	HIGH
Totals				100	100	30			

Current Veg-Fuel Departure Current Frequency Departure Current Frequency-Severity Departure
 Veg-Fuel Condition Class Current Severity Departure Frequency-Severity Condition Class
 Strata Condition Class

Fire Regime and Condition Class - Natural Fire Regime Summary

PVG #	Average Natural Fire Frequency	Strata Composition (%)	Natural Fire Frequency	Average Natural Fire Severity	Strata Composition (%)	Natural Severity
1	60	100	60	50	100	50
Sum		100	60		100	50



Project Natural (Historical) Fire Frequency:

Weighted Mean Fire Frequency: 60 years
 Fire Frequency Class: Infrequent (35-200)

Project Natural (Historical) Fire Severity:

Weighted Mean Upper Layer Severity Frequency: 50 %
 Fire Severity Class: Mixed (>25% and <=75%)

Project Natural Fire Regime Group:

III - Infrequent Mixed and Surface

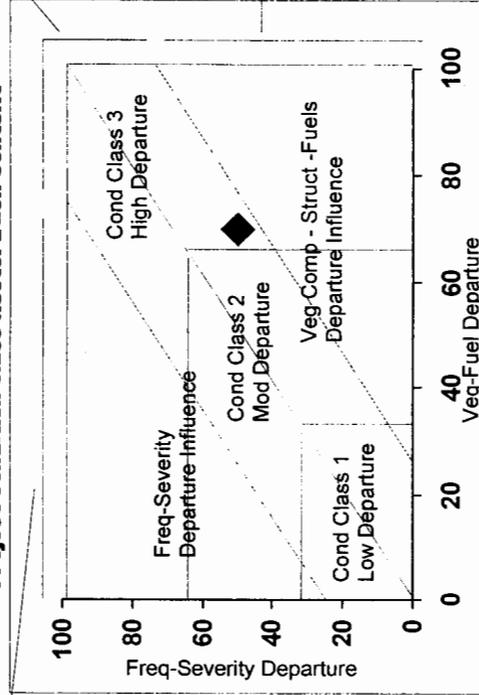
Fire Regime and Condition Class - Summary

PVG #	Veg-Fuel Departure	Strata Composition (%)	Veg-Fuel Departure	Freq-Severity Departure	Strata Composition (%)	Freq-Severity Departure
1	70	100	70	50	100	50
Sum		100	70		100	50
Class			3			2

Restoration of fire effects

Project Fire Regime Condition Class: 3 (67-100%)

Project Condition Class Restoration Context



Restoration of fire effects

Restoration of vegetation, structure, and fuels

Alternative 2 and 3

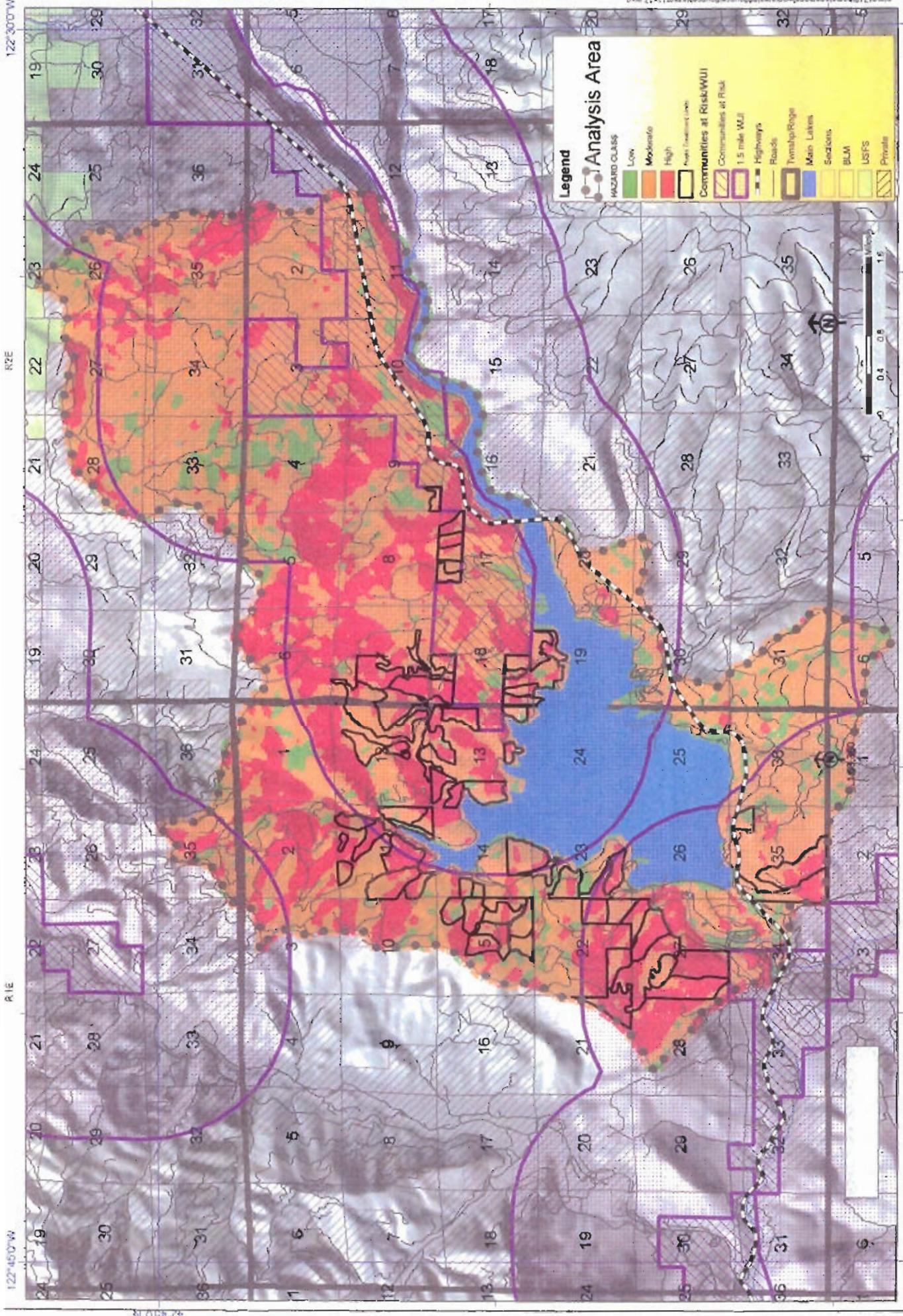
Unit	Treatment	Acres	Legal	Fire Regime	Fire Hazard
35-1	Hand pile	61	33 1E 35	1	Mod
35-2	Hand pile	45	33-1E 35	1	High
35-3	Hand pile	95	33 1E 35	1	High
35-4	Hand pile	20	33 1E 35	1	Mod
27-1	Hand pile	30	33 1E 27	1	High
27-2	Hand pile	65	33 1E 27	1	High
27-4	Hand pile	60	33 1E 27	1	High
22-2	Slashbuster	32	33 1E 22	1	Mod
23-1	Slashbuster	16	33 1E 23	1	High
23-2	Hand Pile	13	33 1E 23	1	Mod
23-4	Hand Pile	40	33 1E 23	1	High
23-5	Slashbuster	45	33 1E 23	1	High
13-2	Hand pile	25	33 1E 13	1	High
13-3	Hand pile	55	33 1E 13	1	High
13-4	Hand pile	20	33 1E 13	1	Mod
13-6	Underburn	23	33 1E 13	1	Mod
18-1	Hand pile	30	33 2E 18	1	High
18-3	Underburn	25	33 2E 18	1	Mod
18-4	Underburn	55	33 2E 18	1	Mod
18-5	Underburn	24	33 2E 18	1	Mod
18-6	Hand pile	37	33 2E 18	1	Mod
18-7	Hand pile	21	33 2E 18	1	Low
19-1	Hand pile	25	33 2E 19	1	High
17-1	Hand pile	24	33 2E 17	1	Mod
17-2	Hand pile	40	33 2E 17	1	Mod
9-1	Hand pile	20	33 2E 9	1	Mod
27-3	Hand pile	85	33 1E 27	1	High
27-5	Hand pile	110	33 1E 27	1	High
22-1	Hand pile	41	33 1E 22	1	High
14-1	Hand pile	22	33 1E 14	1	Mod
14-2	Hand pile	15	33 1E 14	1	Mod
14-3	Hand pile	65	33 1E 14	1	Mod
15-1	Hand pile	40	33 1E 15	1	Mod

15-2	Hand pile	30	33 1E 15	1	High
15-7	Hand pile	35	33 1E 15	1	Mod
15-8	Hand pile	35	33 1E 15	1	Mod
11-3	Hand pile	35	33-1E 11	1	High
11-4	Hand pile	40	33-1E 11	1	High
11-5	Hand pile	70	33-1E 11	1	High
11-6	Hand pile	85	33-1E 11	1	High
11-7	Hand pile	25	33-1E 11	1	High
18-2	Underburn	75	33 2E 18	1	Mod
7-1	Hand pile	21	33 2E 7	1	Mod
7-2	Hand pile	70	33 2E 7	1	High
7-3	Hand pile	21	33 2E 7	1	High
8-1	Hand pile	25	33 2E 8	1	High
8-2	Hand pile	21	33 2E 8	1	High
22-3	Hand pile	25	33 1E 22	1	High
22-4	Hand pile	65	33 1E 22	1	High
15-3	Hand pile	45	33 1E 15	1	Mod
15-4	Hand pile	40	33 1E 15	1	Mod
15-5	Slashbuster	27	33 1E 15	1	Mod
15-6	Slashbuster	30	33 1E 15	1	Mod
11-1	Hand pile	25	33-1E 11	1	Mod
11-2	Hand pile	15	33-1E 11	1	High
11-8	Hand pile	12	33-1E 11	1	Low
11-9	Hand pile	35	33-1E 11	1	Mod
11-10	Hand pile	20	33-1E 11	1	High
12-1	Hand pile	40	33 1E 12	1	Mod
12-2	Slashbuster	126	33 1E 12	1	Mod
12-3	Slashbuster	8	33 1E 12	1	High
12-4	Underburn	40	33 1E 12	1	Mod
12-5	Hand pile	50	33 1E 12	1	Mod
12-6	Hand pile	20	33 1E 12	1	Mod
13-1	Hand pile	35	33 1E 13	1	High
13-5	Underburn	55	33 1E 13	1	Mod
		2625			

Alternative 3 and 4

Unit	Treatment	Acres	Legal	Fire Regime	Fire Hazard
35-1	Hand pile	61	33 1E 35	1	Mod
35-2	Hand pile	45	33-1E 35	1	High
35-3	Hand pile	95	33 1E 35	1	High
35-4	Hand pile	20	33 1E 35	1	Mod
27-1	Hand pile	30	33 1E 27	1	High
27-2	Hand pile	65	33 1E 27	1	High
27-4	Hand pile	60	33 1E 27	1	High
22-2	Hand pile	32	33 1E 22	1	Mod
23-1	Hand pile	16	33 1E 23	1	High
23-2	Hand Pile	13	33 1E 23	1	Mod
23-4	Hand Pile	40	33 1E 23	1	High
23-5	Underburn	45	33 1E 23	1	High
13-2	Hand pile	25	33 1E 13	1	High
13-3	Hand pile	55	33 1E 13	1	High
13-4	Hand pile	20	33 1E 13	1	Mod
13-6	Underburn	23	33 1E 13	1	Mod
18-1	Hand pile	30	33 2E 18	1	High
18-3	Underburn	25	33 2E 18	1	Mod
18-4	Underburn	55	33 2E 18	1	Mod
18-5	Underburn	24	33 2E 18	1	Mod
18-6	Hand pile	37	33 2E 18	1	Mod
18-7	Hand pile	21	33 2E 18	1	Low
19-1	Hand pile	25	33 2E 19	1	High
17-1	Hand pile	24	33 2E 17	1	Mod
17-2	Hand pile	40	33 2E 17	1	Mod
9-1	Hand pile	20	33 2E 9	1	Mod
27-3	Hand pile	85	33 1E 27	1	High
27-5	Hand pile	110	33 1E 27	1	High
22-1	Hand pile	41	33 1E 22	1	High
14-1	Hand pile	22	33 1E 14	1	Mod
14-2	Hand pile	15	33 1E 14	1	Mod
14-3	Hand pile	65	33 1E 14	1	Mod
15-1	Hand pile	40	33 1E 15	1	Mod

15-2	Hand pile	30	33 1E 15	1	High
15-7	Hand pile	35	33 1E 15	1	Mod
15-8	Hand pile	35	33 1E 15	1	Mod
11-3	Hand pile	35	33-1E 11	1	High
11-4	Hand pile	40	33-1E 11	1	High
11-5	Hand pile	70	33-1E 11	1	High
11-6	Hand pile	85	33-1E 11	1	High
11-7	Hand pile	25	33-1E 11	1	High
18-2	Underburn	75	33 2E 18	1	Mod
7-1	Hand pile	21	33 2E 7	1	Mod
7-2	Hand pile	70	33 2E 7	1	High
7-3	Hand pile	21	33 2E 7	1	High
8-1	Hand pile	25	33 2E 8	1	High
8-2	Hand pile	21	33 2E 8	1	High
22-3	Hand pile	25	33 1E 22	1	High
22-4	Hand pile	65	33 1E 22	1	High
15-3	Hand pile	45	33 1E 15	1	Mod
15-4	Hand pile	40	33 1E 15	1	Mod
15-5	Hand pile	27	33 1E 15	1	Mod
15-6	Hand pile	30	33 1E 15	1	Mod
11-1	Hand pile	25	33-1E 11	1	Mod
11-2	Hand pile	15	33-1E 11	1	High
11-8	Hand pile	12	33-1E 11	1	Low
11-9	Hand pile	35	33-1E 11	1	Mod
11-10	Hand pile	20	33-1E 11	1	High
12-1	Hand pile	40	33 1E 12	1	Mod
12-2	Underburn	126	33 1E 12	1	Mod
12-3	Hand pile	8	33 1E 12	1	High
12-4	Underburn	40	33 1E 12	1	Mod
12-5	Hand pile	50	33 1E 12	1	Mod
12-6	Hand pile	20	33 1E 12	1	Mod
13-1	Hand pile	35	33 1E 13	1	High
13-5	Underburn	55	33 1E 13	1	Mod
		2625			



*Modeled by combining fuel model, aspect, slope, elevation

Map prepared by the Forest Service, U.S. Department of Agriculture, for the National Fire Plan. The map is for informational purposes only and does not constitute a warranty or guarantee of accuracy. The map is subject to change without notice. For more information, contact the Forest Service, U.S. Department of Agriculture, at 1-877-486-6262.



122°45'0"W

Analyst: D. Pence

Project name: Flounce

Date: 4/8/2003

Comments: type any comments here

fuel model numbers ==> 6 Dormant brush, hardwood slash

	A	B	C	D	E	F	units
surface fuel model	6	6	6	6	6	6	number
dead moisture							
optional	0	0	0	0	0	0	percent
1-hr	4	4	4	4	4	4	percent
10-hr	6	6	6	6	6	6	percent
100-hr	8	8	8	8	8	8	percent
live moisture							
live	30	30	30	30	30	30	percent
optional1	0	0	0	0	0	0	percent
optional2	0	0	0	0	0	0	percent
canopy fuels							
bulk density	20	20	20	20	20	20	kg/m3
foliar moisture content	0	0	0	0	0	0	percent
canopy base height	20	20	20	20	20	20	feet
canopy fuel load	0	0	0	0	0	0	kg/m2
site							
slope	10	20	30	40	50	60	percent
open windspeed	0	0	0	0	0	0	m/hr
wind direction, from uphill	0	0	0	0	0	0	degrees
wind reduction factor	0.3	0.3	0.3	0.3	0.3	0.3	ratio
multipliers							
surface ROS	1.0	1.0	1.0	1.0	1.0	1.0	
crown fire ROS	1.0	1.0	1.0	1.0	1.0	1.0	
surface load & depth	1.0	1.0	1.0	1.0	1.0	1.0	
surface fire intensity	1.0	1.0	1.0	1.0	1.0	1.0	

*** CONSTANTS ***

temp	95	Fahrenheit
St	0.0555	mineral fraction
Se	0.01	effective mmf fraction
Pp	32	lbs/ft3
elapsed time	1	hour
map scale	24000	1/27, ???
Hcrown	18000	kJ/kg

set windspeed range
 windspeed mi/hr
 low 0
 high 20

flame length
 feet

	Scenario A	Scenario B	Scenario C	Scenario D	Scenario E	Scenario F
0.0	1.996	2.529	3.202	3.931	4.682	5.441
1.0	2.277	4.358	5.585	7.107	8.851	10.774
2.0	3.892	4.990	6.150	7.611	9.305	11.186
3.0	5.021	5.729	6.822	8.219	9.858	11.692
4.0	5.869	6.529	7.560	8.895	10.478	12.264
5.0	6.747	7.365	8.342	9.620	11.149	12.886
6.0	7.644	8.227	9.155	10.381	11.858	13.547
7.0	8.552	9.105	9.990	11.168	12.597	14.240
8.0	9.468	9.994	10.842	11.976	13.360	14.960
9.0	10.389	10.892	11.706	12.801	14.143	15.701
10.0	11.313	11.796	12.580	13.638	14.941	16.460
11.0	12.239	12.704	13.461	14.486	15.752	17.234
12.0	13.167	13.615	14.347	15.341	16.574	18.022
13.0	14.095	14.529	15.238	16.204	17.406	18.820
14.0	15.023	15.444	16.132	17.073	18.245	19.628
15.0	15.951	16.360	17.029	17.945	19.090	20.444
16.0	16.879	17.276	17.929	18.822	19.941	21.267
17.0	17.806	18.193	18.829	19.702	20.797	22.096
18.0	18.733	19.111	19.731	20.585	21.656	22.931
19.0	19.659	20.028	20.634	21.469	22.519	23.771
20.0	20.584	20.945	21.538	22.356	23.386	24.614

set windspeed range
 windspeed
 low high

final rate of spread chains/hr

	Scenario A	Scenario B	Scenario C	Scenario D	Scenario E	Scenario F
0.0	2.661	4.450	7.433	11.608	16.977	23.538
1.0	3.543	10.614	15.403	22.108	30.728	41.264
2.0	9.222	13.009	17.798	24.502	33.122	43.658
3.0	13.129	16.002	20.791	27.495	36.116	46.651
4.0	16.591	19.465	24.254	30.958	39.578	50.114
5.0	20.451	23.325	28.114	34.818	43.438	53.974
6.0	24.661	27.534	32.323	39.027	47.648	58.183
7.0	29.184	32.058	36.847	43.551	52.171	62.707
8.0	33.996	36.870	41.659	48.363	56.983	67.519
9.0	39.075	41.948	46.737	53.442	62.062	72.597
10.0	44.403	47.276	52.065	58.770	67.390	77.925
11.0	49.966	52.839	57.628	64.333	72.953	83.488
12.0	55.751	58.624	63.413	70.118	78.738	89.274
13.0	61.748	64.621	69.410	76.115	84.735	95.271
14.0	67.947	70.821	75.610	82.314	90.934	101.470
15.0	74.340	77.214	82.003	88.707	97.327	107.863
16.0	80.920	83.793	88.582	95.287	103.907	114.442
17.0	87.679	90.552	95.341	102.046	110.666	121.202
18.0	94.612	97.485	102.274	108.979	117.599	128.134
19.0	101.713	104.586	109.375	116.079	124.699	135.235
20.0	108.976	111.850	116.638	123.343	131.963	142.499

Analyst: D. Pence		Comments: type any comments here												
Project name: Flounce		fuel model numbers ==>> 2 Timber (grass and understory)												
Date: 4/8/2003		A	B	C	D	E	F	units						
surface fuel model		2	2	2	2	2	2	number						
dead moisture	optional	0	0	0	0	0	0	percent						
	1-hr	4	4	4	4	4	4	percent						
	10-hr	6	6	6	6	6	6	percent						
	100-hr	8	8	8	8	8	8	percent						
live moisture	live	30	30	30	30	30	30	percent						
	optional1	0	0	0	0	0	0	percent						
	optional2	0	0	0	0	0	0	percent						
canopy fuels	bulk density	20	20	20	20	20	20	kg/m3						
	foliar moisture content	0	0	0	0	0	0	percent						
	canopy base height	20	20	20	20	20	20	feet						
	canopy fuel load	0	0	0	0	0	0	kg/m2						
site	slope	10	20	30	40	50	60	percent						
	open windspeed	0	0	0	0	0	0	mi/hr						
	wind direction, from uphill	0	0	0	0	0	0	degrees						
	wind reduction factor	0.3	0.3	0.3	0.3	0.3	0.3	ratio						
multipliers	surface ROS	1.0	1.0	1.0	1.0	1.0	1.0							
	crown fire ROS	1.0	1.0	1.0	1.0	1.0	1.0							
	surface load & depth	1.0	1.0	1.0	1.0	1.0	1.0							
	surface fire intensity	1.0	1.0	1.0	1.0	1.0	1.0							

*** CONSTANTS ***

temp	95 Fahrenheit
St	0.0555 mineral fraction
Se	0.01 effective mnrl fraction
Pp	32 lbs/ft3
elapsed time	1 hour
map scale	24000 1/?? ???
Hcrown	18000 k/kg

set windspeed range

windspeed

low

high

flame length

	Scenario A	Scenario B	Scenario C	Scenario D	Scenario E	Scenario F
0.0	2.457	3.047	3.806	4.639	5.502	6.378
1.0	2.533	4.398	5.637	7.172	8.932	10.872
2.0	4.127	5.036	6.207	7.681	9.391	11.289
3.0	5.067	5.782	6.884	8.295	9.948	11.799
4.0	5.923	6.588	7.629	8.977	10.574	12.376
5.0	6.809	7.433	8.418	9.709	11.251	13.004
6.0	7.714	8.302	9.239	10.476	11.967	13.671
7.0	8.631	9.188	10.082	11.271	12.713	14.371
8.0	9.555	10.086	10.942	12.086	13.483	15.097
9.0	10.485	10.992	11.814	12.918	14.272	15.845
10.0	11.417	11.905	12.695	13.763	15.078	16.611
11.0	12.352	12.821	13.584	14.619	15.897	17.393
12.0	13.288	13.741	14.479	15.482	16.727	18.187
13.0	14.224	14.662	15.378	16.353	17.565	18.993
14.0	15.161	15.586	16.281	17.229	18.412	19.808
15.0	16.098	16.510	17.186	18.110	19.265	20.632
16.0	17.034	17.435	18.093	18.995	20.124	21.462
17.0	17.970	18.360	19.002	19.883	20.987	22.299
18.0	18.905	19.286	19.913	20.774	21.855	23.142
19.0	19.840	20.212	20.824	21.666	22.726	23.989
20.0	20.773	21.137	21.736	22.561	23.600	24.840

set windspeed range

windspeed mi/hr

low high

final rate of spread

	Scenario A	Scenario B	Scenario C	Scenario D	Scenario E	Scenario F
0.0	4.124	6.581	10.677	16.412	23.785	32.797
1.0	4.405	10.614	15.403	22.108	30.728	41.264
2.0	9.779	13.009	17.798	24.502	33.122	43.658
3.0	13.129	16.002	20.791	27.495	36.116	46.651
4.0	16.591	19.465	24.254	30.958	39.578	50.114
5.0	20.451	23.325	28.114	34.818	43.438	53.974
6.0	24.661	27.534	32.323	39.027	47.648	58.183
7.0	29.184	32.058	36.847	43.551	52.171	62.707
8.0	33.996	36.870	41.659	48.363	56.983	67.519
9.0	39.075	41.948	46.737	53.442	62.062	72.597
10.0	44.403	47.276	52.065	58.770	67.390	77.925
11.0	49.966	52.839	57.628	64.333	72.953	83.488
12.0	55.751	58.624	63.413	70.118	78.738	89.274
13.0	61.748	64.621	69.410	76.115	84.735	95.271
14.0	67.947	70.821	75.610	82.314	90.934	101.470
15.0	74.340	77.214	82.003	88.707	97.327	107.863
16.0	80.920	83.793	88.582	95.287	103.907	114.442
17.0	87.679	90.552	95.341	102.046	110.666	121.202
18.0	94.612	97.485	102.274	108.979	117.599	128.134
19.0	101.713	104.586	109.375	116.079	124.699	135.235
20.0	108.976	111.850	116.638	123.343	131.963	142.499

Analyst: D. Pence
 Project name: Flounce
 Date: 4/8/2003

Comments: type any comments here

fuel model numbers ==>> 6 Closed timber litter

	A	B	C	D	E	F	units
surface fuel model	8	8	8	8	8	8	number
dead moisture	0	0	0	0	0	0	percent
optional	4	4	4	4	4	4	percent
1-hr	6	6	6	6	6	6	percent
10-hr	8	8	8	8	8	8	percent
100-hr	30	30	30	30	30	30	percent
live moisture	0	0	0	0	0	0	percent
optional1	0	0	0	0	0	0	percent
optional2	0	0	0	0	0	0	percent
canopy fuels	20	20	20	20	20	20	kg/m3
bulk density	0	0	0	0	0	0	percent
foliar moisture content	20	20	20	20	20	20	feet
canopy base height	0	0	0	0	0	0	kg/m2
canopy fuel load	10	20	30	40	50	60	percent
slope	0	0	0	0	0	0	mi/hr
open windspeed	0	0	0	0	0	0	degrees
wind direction, from uphill	0.3	0.3	0.3	0.3	0.3	0.3	ratio
wind reduction factor	1.0	1.0	1.0	1.0	1.0	1.0	
surface ROS	1.0	1.0	1.0	1.0	1.0	1.0	
crown fire ROS	1.0	1.0	1.0	1.0	1.0	1.0	
surface load & depth	1.0	1.0	1.0	1.0	1.0	1.0	
surface fire intensity	1.0	1.0	1.0	1.0	1.0	1.0	

*** CONSTANTS ***

temp	95	Farenheit
St	0.0555	mineral fraction
Se	0.01	effective mmi fraction
Pp	32	lbs/ft3
elapsed time	1	hour
map scale	24000	1??,???
Hcrown	18000	kJ/kg

Analyst: D. Pence
 Project name: Flounce
 Date: 04/08/03

Comments: type any comments here

OUTPUTS

	fuel scenario						units
	A	B	C	D	E	F	
type of fire	conditional	conditional	conditional	conditional	conditional	conditional	
crow fraction burned	0.00	0.00	0.00	0.00	0.00	0.00	fraction
rate of spread	0.3	0.4	0.6	0.9	1.3	1.7	chains/hr
heat per unit area	210	210	210	210	210	210	btu/ft2
fireline intensity	1	2	2	4	5	7	btu/ft/sec
flame length	0.5	0.6	0.7	0.8	0.9	1.1	feet
reaction intensity, surface	1032	1032	1032	1032	1032	1032	btu/ft2/sec
effective mid-flame wind	0.3	0.9	1.5	2.2	3.0	3.9	mi/hr
direction of max spread	0	0	0	0	0	0	degrees
scorch height	1.6	1.7	1.7	1.6	1.6	1.6	feet
length-to-breadth ratio	1.1	1.2	1.4	1.6	1.8	2.0	ratio
perimeter growth rate	1.8	2.1	2.5	3.2	4.0	4.9	chains/hr
fire area	0	0	0	0	0	0	acres
spread distance	0.3	0.4	0.6	0.9	1.3	1.7	chains
map spread distance	0.0	0.0	0.0	0.0	0.0	0.1	inches
Potential crown fire ROS	6.3	9.2	14.0	20.7	29.3	39.9	chains/hr
	CROWN FIRE HAZARD INDICES						
Torching Index	49.7	49.3	48.7	47.8	46.6	45.2	mi/hr
Crowning Index	2.1	0.8	0.0	0.0	0.0	0.0	mi/hr
Surfacing Index	2.4	1.3	0.0	0.0	0.0	0.0	mi/hr
	CRITICAL CROWN FIRE PARAMETERS						
fireline intensity	43	43	43	43	43	43	btu/ft/sec
flame length	2.5	2.5	2.5	2.5	2.5	2.5	feet
Critical surface ROS	11.2	11.2	11.2	11.2	11.2	11.2	chains/hr
Canopy base height	1.9	2.3	3.0	3.8	4.8	5.8	feet
	ACTIVE SPREAD						
Canopy bulk density	1.41	0.97	0.64	0.43	0.31	0.22	kg/m3
R'active	0	0	0	0	0	0	chains/hr
	CESSATION						
Canopy base height	13.7	17.6	23.3	30.2	38.1	46.7	feet
O'cessation	2.4	1.3	0.0	0.0	0.0	0.0	mi/hr

set windspeed range
 windspeed m/hr
 low 0
 high 20

flame length
 feet

	Scenario A	Scenario B	Scenario C	Scenario D	Scenario E	Scenario F
0.0	0.498	0.577	0.685	0.810	0.943	1.080
1.0	0.521	0.596	0.701	0.823	0.954	1.090
2.0	0.559	0.629	0.729	0.846	0.973	1.106
3.0	0.604	0.668	0.762	0.874	0.997	1.127
4.0	0.652	0.711	0.799	0.906	1.025	1.151
5.0	0.702	0.757	0.839	0.941	1.055	1.177
6.0	0.752	0.803	0.881	0.977	1.087	1.206
7.0	0.803	0.850	0.923	1.015	1.121	1.236
8.0	0.853	0.898	0.966	1.054	1.155	1.267
9.0	0.903	0.945	1.010	1.093	1.191	1.299
10.0	0.953	0.992	1.054	1.133	1.227	1.331
11.0	1.002	1.039	1.097	1.174	1.264	1.365
12.0	1.050	1.085	1.141	1.214	1.301	1.399
13.0	1.098	1.131	1.184	1.254	1.338	1.433
14.0	1.144	1.176	1.227	1.295	1.376	1.468
15.0	1.191	1.221	1.270	1.335	1.414	1.503
16.0	1.237	1.266	1.313	1.375	1.451	1.538
17.0	1.282	1.310	1.355	1.415	1.489	1.573
18.0	1.326	1.353	1.397	1.455	1.527	1.609
19.0	1.370	1.396	1.438	1.495	1.564	1.644
20.0	1.414	1.439	1.480	1.534	1.602	1.679

set windspeed range
 windspeed mi/hr
 low 0
 high 20

final rate of spread
 chains/hr

	Scenario A	Scenario B	Scenario C	Scenario D	Scenario E	Scenario F
0.0	0.324	0.446	0.649	0.933	1.299	1.745
1.0	0.357	0.479	0.682	0.966	1.332	1.778
2.0	0.416	0.538	0.741	1.025	1.391	1.837
3.0	0.492	0.614	0.817	1.101	1.467	1.913
4.0	0.582	0.704	0.907	1.191	1.556	2.003
5.0	0.683	0.805	1.008	1.292	1.657	2.104
6.0	0.795	0.916	1.119	1.404	1.769	2.216
7.0	0.915	1.037	1.240	1.524	1.890	2.336
8.0	1.045	1.167	1.370	1.654	2.019	2.466
9.0	1.183	1.305	1.508	1.792	2.157	2.604
10.0	1.328	1.450	1.653	1.937	2.302	2.749
11.0	1.481	1.602	1.805	2.090	2.455	2.902
12.0	1.640	1.762	1.965	2.249	2.614	3.061
13.0	1.806	1.928	2.131	2.415	2.780	3.227
14.0	1.978	2.100	2.303	2.587	2.953	3.399
15.0	2.157	2.279	2.482	2.766	3.131	3.578
16.0	2.341	2.463	2.666	2.950	3.315	3.762
17.0	2.531	2.653	2.856	3.140	3.505	3.952
18.0	2.726	2.848	3.051	3.335	3.701	4.147
19.0	2.927	3.049	3.252	3.536	3.901	4.348
20.0	3.133	3.255	3.458	3.742	4.107	4.554

Analyst: D. Pence Project name: Flounce Date: 4/8/2003		Comments: type any comments here						
fuel model numbers ==>> 9 Hardwood (long-needle pine) litter		A	B	C	D	E	F	units
surface fuel model		9	9	9	9	9	9	number
dead moisture	optional	0	0	0	0	0	0	percent
	1-hr	4	4	4	4	4	4	percent
	10-hr	6	6	6	6	6	6	percent
	100-hr	8	8	8	8	8	8	percent
live moisture	live	30	30	30	30	30	30	percent
	optional1	0	0	0	0	0	0	percent
	optional2	0	0	0	0	0	0	percent
canopy fuels	bulk density	20	20	20	20	20	20	kg/m3
	foliar moisture content	0	0	0	0	0	0	percent
	canopy base height	20	20	20	20	20	20	feet
	canopy fuel load	0	0	0	0	0	0	kg/m2
site	slope	10	20	30	40	50	60	percent
	open windspeed	0	0	0	0	0	0	mi/hr
	wind direction, from uphill	0	0	0	0	0	0	degrees
	wind reduction factor	0.3	0.3	0.3	0.3	0.3	0.3	ratio
multipliers	surface ROS	1.0	1.0	1.0	1.0	1.0	1.0	
	crown fire ROS	1.0	1.0	1.0	1.0	1.0	1.0	
	surface load & depth	1.0	1.0	1.0	1.0	1.0	1.0	
	surface fire intensity	1.0	1.0	1.0	1.0	1.0	1.0	

*** CONSTANTS ***
 temp 95 Fahrenheit
 Sl 0.0555 mineral fraction
 Se 0.01 effective mnrf fraction
 Pp 32 lbs/ft3
 elapsed time 1 hour
 map scale 24000 1/77, ???
 Hcrown 18000 kg/kg

Analyst: D. Pence Project name: Flounce Date: 04/08/03		Comments: type any comments here					
OUTPUTS							
	fuel scenario						
	A	B	C	D	E	F	
type of fire	conditional	conditional	conditional	conditional	conditional	surface	
crown fraction burned rate of spread heat per unit area fireline intensity flame length reaction intensity, surface effective mid-flame wind direction of max spread scorch height length-to-breadth ratio perimeter growth rate fire area spread distance map spread distance Potential crown fire ROS	0.00 1.2 416 9 1.2 2690 0.5 0 6.0 1.1 6.5 0 1.2 0.0 6.3	0.00 1.7 416 13 1.4 2690 1.0 0 7.3 1.3 7.5 0 1.7 0.1 9.2	0.00 2.5 416 19 1.7 2690 1.7 0 8.9 1.4 9.4 1 2.5 0.1 14.0	0.00 3.6 416 27 2.1 2690 2.3 0 10.5 1.6 12.0 1 3.6 0.1 20.7	0.00 5.0 416 38 2.4 2690 3.0 0 12.2 1.8 15.2 2 5.0 0.2 29.3	fraction chains/hr btu/ft ² btu/ft/sec feet btu/ft ² /sec mi/hr degrees feet ratio chains/hr acres chains inches chains/hr	
Torching Index Crowning Index Surfacing Index	10.7 2.1 2.1	10.0 0.8 0.8	8.8 0.0 0.0	8.8 0.0 0.0	6.8 0.0 0.0	3.3 0.0 0.0	mi/hr mi/hr mi/hr
INITIATION fireline intensity flame length Critical surface ROS Canopy base height	43 2.5 5.6 7.0	43 2.5 5.6 8.8	43 2.5 5.6 11.5	43 2.5 5.6 14.8	43 2.5 5.6 18.6	43 2.5 5.6 22.7	btu/ft/sec feet chains/hr feet
ACTIVE SPREAD Canopy bulk density R ^{active}	1.41 0	0.97 0	0.64 0	0.43 0	0.31 0	0.22 0	kg/m ³ chains/hr
CESSATION Canopy base height Q ^{cessation}	21.6 0.0	27.8 0.0	36.7 0.0	47.6 0.0	60.1 0.0	73.7 0.0	feet mi/hr

set windspeed range
 windspeed mi/hr
 low
 high

flame length feet

	Scenario A	Scenario B	Scenario C	Scenario D	Scenario E	Scenario F
0.0	1.233	1.445	1.735	2.063	2.412	2.771
1.0	1.269	1.475	1.759	2.083	2.429	2.752
2.0	1.347	1.541	1.813	2.128	2.466	2.752
3.0	1.452	1.632	1.889	2.191	2.519	2.752
4.0	1.574	1.739	1.980	2.268	2.519	2.752
5.0	1.706	1.858	2.083	2.357	2.519	2.752
6.0	1.846	1.986	2.196	2.455	2.519	2.752
7.0	1.990	2.119	2.315	2.551	2.519	2.752
8.0	2.137	2.256	2.439	2.648	2.519	2.752
9.0	2.285	2.395	2.563	2.745	2.519	2.752
10.0	2.434	2.537	2.687	2.842	2.519	2.752
11.0	10.511	10.910	11.559	12.439	13.527	14.800
12.0	11.307	11.692	12.321	13.174	14.233	15.476
13.0	12.104	12.477	13.086	13.915	14.947	16.162
14.0	12.901	13.262	13.854	14.661	15.667	16.855
15.0	13.698	14.049	14.624	15.411	16.393	17.556
16.0	14.495	14.836	15.396	16.164	17.124	18.263
17.0	15.291	15.624	16.170	16.919	17.859	18.975
18.0	16.087	16.411	16.944	17.677	18.597	19.692
19.0	16.882	17.199	17.720	18.437	19.339	20.413
20.0	17.677	17.986	18.496	19.198	20.082	21.138

set windspeed range
 windspeed mi/hr
 low 0
 high 20

final rate of spread
 chains/hr

	Scenario A	Scenario B	Scenario C	Scenario D	Scenario E	Scenario F
0.0	1.173	1.657	2.464	3.594	5.046	6.821
1.0	1.248	1.733	2.539	3.669	5.121	41.264
2.0	1.422	1.906	2.713	3.842	5.295	43.658
3.0	1.673	2.157	2.964	4.094	5.546	46.651
4.0	1.994	2.478	3.285	4.414	39.578	50.114
5.0	2.378	2.862	3.669	4.798	43.438	53.974
6.0	2.822	3.306	4.113	5.242	47.648	58.183
7.0	3.323	3.807	4.614	43.551	52.171	62.707
8.0	3.878	4.362	5.169	48.363	56.983	67.519
9.0	4.486	4.970	46.737	53.442	62.062	72.597
10.0	5.145	5.629	52.065	58.770	67.390	77.925
11.0	49.966	52.839	57.628	64.333	72.953	83.488
12.0	55.751	58.624	63.413	70.118	78.738	89.274
13.0	61.748	64.621	69.410	76.115	84.735	95.271
14.0	67.947	70.821	75.610	82.314	90.934	101.470
15.0	74.340	77.214	82.003	88.707	97.327	107.863
16.0	80.920	83.793	88.582	95.287	103.907	114.442
17.0	87.679	90.552	95.341	102.046	110.666	121.202
18.0	94.612	97.485	102.274	108.979	117.599	128.134
19.0	101.713	104.586	109.375	116.079	124.699	135.235
20.0	108.976	111.850	116.638	123.343	131.963	142.499

Appendix H Unit Summary Table

Township Range	Sec	Operational Inventory Unit & Key Number	Alternatives 2&4 (Acres)	Alternatives 3&5 (Acres)	Logging System (Acres)
33S-1E	1	003 - 0	NGFMA-CON 17	SC 17	T (14) & C(3)
33S-1E	1	004 - 163009	SC 4	SC 4	T
33S-1E	1	004 - 163009	DM 10	DM 10	H
33S-2E	3	003 - 160847	DM 36	DM 36	T (24) & C (12)
33S-2E	4	002 - 0	SGFMA 13	SC 13	T
33S-2E	5	003 - 160858	DM 14	DM 14	T
33S-2E	8	005 - 162477	DM 22	DM 22	H(16) & T (6)
33S-2E	9	002 - 160873	DM 19	DM 19	T
33S-1E	11	001 - 160720	SC 6	SC 6	C
33S-1E	11	008 - 160720	SC 17	SC 17	T
33S-1E	11	010 - 163027	DM 5	DM 5	C
33S-2E	17	001 - 160893	DM 14	DM 14	T
33S-2E	19	003 - 160895	DM 36	DM 36	T
33S-1E	23	779 - 160786	DM 36	DM 36	T(31)&C(5)
33S-1E	23	005 - 160789	DM 13	DM 13	T
33S-1E	27	003 - 160795	DM 34	DM 34	H
33S-2E	31	007 - 163050	SC 11	SC 11	T
32S-2E	32	002 - 160409	DM 5	DM 5	T
32S-2E	33	003 - 160409	SGFMA 56	SGFMA 12	T
32S-2E	33	003 - 160409	SC 13	SC 57	T
33S-1E	35	005 - 160840	SC 14	SC 14	H
33S-1E	35	006 - 160841	DM 19	DM 19	H
33S-1E	35	007 - 160842	DM 68	DM 68	T
33S-1E	35	008 - 0	NGFMA 6	DM 6	T
33S-1E	35	012N-161296	NGFMA 6	NGFMA 6	T
33S-1E	35	012S-161296	DM 9	DM 9	T

DM – Density Management , stands are thinned or partially harvested to maintain or enhance forest health, stand structure and function for wildlife purposes or for purposes other than growth and yield. Marking is focused towards the smaller diameter classes.

SC – Selective Cut, areas are marked on an individual tree basis to a prescription. Generally, stand diameter classes are larger with a higher amount of risk trees in all diameter classes. Individual trees are removed based upon crown ratio, form and vigor.

SGFMA – Southern General Forest Management Area - Structural Retention Regeneration Harvest – final harvest, that consists of treatments in which trees and downed woody debris remain to meet the ROD standards & guidelines – 16 - 25 trees/acre > 20" dbh.

NGFMA – Northern General Forest Management Area – Modified Even-Aged Regeneration Harvest - final harvest, that consists of treatments in which trees and downed woody debris remain to meet the ROD standards & guidelines - 6 - 8 trees/acre > 20" dbh.

NGFMA CON – Northern General Forest Management Connectivity Regeneration Harvest - final harvest, that consists of treatments in which trees and downed woody debris remain to meet the ROD standards & guidelines - 12 - 18 trees/acre > 20" dbh.

Logging System : H (Helicopter) - 93 Acres T (Tractor) - 379 Acres C (Cable)- 31 Acres

Alternatives 2&4 - DM (340 acres), SGFMA (69 acres), NGFMA (12 acres), NGFMA-CON (17 acres), SC (65 acres) = 503 Acres

Alternatives 3&5 - DM (346 acres), SGFMA (12 acres), NGFMA (6 acres), SC (139 acres) = 503 Acres

**BACKGROUND REPORT
VISUAL RESOURCE MANAGEMENT
IN SUPPORT OF THE
FLOUNCE AROUND ENVIRONMENTAL ASSESSMENT**



Prepared for:

U.S. Department of the Interior
Bureau of Land Management
Medford District
Butte Falls Resource Area
3040 Biddle Road
Medford, OR 97501

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May 30, 2003

VISUAL RESOURCE MANAGEMENT BACKGROUND REPORT FLOUNCE AROUND PROJECT

The Flounce Around Project is situated on the south, west and north shores of Lost Creek Reservoir on lands administered by the Bureau of Land Management, Butte Falls Resource Area, Medford District.



VRM CLASSES

The Flounce Around project area has been identified in the BLM Resource Management Plan (RMP) as visual resource management (VRM) Classes II and III. Please refer to the RMP for the Visual Resource Management Classes map.

VRM CLASS OBJECTIVES

The objective of VRM Class II is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color and texture found in the predominant natural features of the characteristic landscape.

The objective of VRM Class III is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.

SCENIC QUALITY

Scenic quality of the study area is classified as Class A, high quality natural scenery at Lost Creek Reservoir and scattered rock bluffs along the north shore, plus Class B, natural scenery that is common to the Oregon Cascade Mountain Character Type.

SENSITIVITY LEVELS

Sensitivity levels of concern for scenery are high, with many recreationists using the lake for boating, fishing, swimming, camping, hiking, bicycling and enjoying the outdoor environment. Additionally, State Highway 62 traverses the project area in an east-west orientation, affording views to the lake and its scenic backdrop. Highway 62 connects the Rogue Valley to Crater Lake National Park, so it is an important travel route for viewing landscape scenery.

DISTANCE ZONES

Distance zones of visibility for the Flounce Around project area are foreground/ middleground, plus some areas that are seldom seen. BLM Handbooks and Manuals describe foreground/ middleground as the area that can be seen from each travel route or recreation area for a distance of 3- to 5-miles, based on topographic screening.



Because Highway 62 and Lost Creek Reservoir are situated in the Rogue River viewshed, surrounded by steep mountainous terrain, most of the project area is located within the foreground/middleground distance zone.

SEEN AREAS & SELDOM SEEN AREAS

Seen areas and seldom seen areas were mapped on USGS topographic maps, based on field analysis and analysis of the topographic model (DEM) utilizing MICRODEM software. Because the mountainous terrain includes numerous streams, canyons, benches and minor draws, there are many occurrences of seldom seen areas. Please refer to the attached

MICRODEM plot of seen areas and seldom seen areas. The green areas are visible from sensitivity level one areas; brown areas are not.

LANDFORM/WATERFORM

The serpentine Rogue River has carved a circuitous, twisting route through the steep mountainous terrain enclosing the Flounce Around project area. Construction of Lost Creek Reservoir by the US Army Corps of Engineers has created a large water body with horizontal line contrasting with the steep mountains. Landform slopes range from <5% on the south shore to bluffs with slopes >150% at Flounce Rock.



VEGETATION

Vegetation around Lost Creek Reservoir has a great deal of visual variety, with thick stands of dark green mixed conifer trees (Douglas fir, ponderosa pine, sugar pine, incense cedar), medium green hardwood trees (black and white oak, madrone, ash) and numerous brushfields of poison oak and gray-green wedge leaf Ceanothus. Large grassy flats occur on the south shore near the marina and campground, plus on the north shore on Corps administered lands. Woody vegetation has a wide variety of ages and sizes, creating a mosaic of patterns and textures that drape over the steep mountains.



On private lands within the viewshed, logging has created new openings in the forest canopy with unnatural skyline edges that need visual rehabilitation. Most of the BLM-administered lands are covered by dense vegetation, trees and shrubs, and forest fuels that have built up to unnatural levels. Fire has been excluded from project lands for several decades, which has changed the visual resources of the vegetation within the project area. Historic photos show that vegetation was more widely scattered, giving an open feeling to the forest. The growth of trees and shrubs has limited visibility through the forest, creating a jungle-like appearance of brush, tree trunks, branches and forest litter on the ground.



ROCKFORM

Rocks in the project area are dramatic, with dark gray vertical bluffs in scattered locations along the north shore, plus the large expanse of dark gray bluffs on the west side of Flounce Rock.



SUMMARY OF SCENIC EFFECTS OF ACTION ALTERNATIVES

Rockform – No change would occur.

Waterform – No change would occur.

Landform – In general, no change would occur. One landform change would occur at a proposed helicopter landing adjacent to Highway 62 northeast of IO-160841. Westbound traffic would have a long duration view into this proposed landing, and there is little- to no-vegetative screening. Construction of this landing would not meet VRM Class II, as removal of existing pine and Douglas fir trees and landform grading would be evident to the casual observer. These visual contrasts could be mitigated, as described in the table and comments below.

Vegetation – Under any action alternative, vegetation would be modified and/or removed, but in general the modification of trees, shrubs and other woody debris would not be evident to the casual observer in the long-term. Short-term visual contrasts would occur, with color and texture changes that would remain for one- to three-years. In most cases, within one-year there would be sufficient green-up of remaining vegetation so that no visual contrast would remain. Only in rare occurrences would color or texture contrasts remain for two- or three-years. Increased amounts of wildflowers and grasses add seasonal color in spring and summer.

Two occurrences of visual contrast would occur in Section 23, T33S, R2E if Slashbuster were to be used to clear brush and small trees adjacent to recreation roads and sites on the west shore of Lost Creek Reservoir. These Slashbuster units would create unnatural colors and textures for a period of one- to three-years, until green-up of remaining vegetation occurred. These visual contrasts could be mitigated, as described in the table and comments below. Please refer to the following analysis tables and the attached detailed visual contrast rating forms for details.

Appendix J Economic Analysis

Economic Comparisons

Alternative 1 – No Action

Since no harvesting would occur under this action, no return would occur to the Federal Treasury. No forestry related jobs would be created.

Alternative 2 - Regeneration Harvest & Canopy Retention

Under this alternative approximately 3.9 million board feet would be harvested, with a return to the Federal Treasury of \$560,000. Direct employment would be 37 jobs resulting in direct income of approximately \$ 1.2 million dollars.

Alternative 3 - Canopy Retention

Under this alternative approximately 3.2 million board feet would be harvested, with a return to the Federal Treasury of \$450,000. Direct employment would be 30 jobs resulting in direct income of approximately \$ 974,000 dollars.

Alternative 4 and 5 are variations of 2 & 3 with similar volumes and were not analyzed.

--Board feet estimates based on stand exam data
--Return to Federal Treasury based on following attachments
--Direct employment figures based on the Northwest Forest Plan FSEIS table 3 & 4 - 49
--Direct income figures based on Oregon Employment Department average weighted wage rates for lumber and wood products

DATE

SPECIES	VOLUME	LOG GRADES BY PERCENT						% CHECK TOTALS
		CODE #1	CODE #2	CODE #3	CODE #4	CODE #5	CODE #6	
OG D. FIR	3872			0.3	0.2	38.2	61.3	100
SG D. FIR	0							0
P. PINE	0							0
SALV.P.P.	0							0
S. PINE	0							0
SALV.S.P.	0							0
W. FIR	0							0
W. HEM	0							0
I. CEDAR	0							0
W.R.CEDAR	0							0
P.O.CEDAR	0							0

LOGGING COST PER MBF FROM LOGGING WORKSHEET \$236.70
 ANY MARGINAL LOG VOLUME ??? 0
 ROAD MAINTENANCE & ROCKWEAR /M \$0.00
 PROFIT & RISK (TYPE 7 UP TO 10) 7 % STUMPAGE COMPUTATION

SPECIES	POND VALUE	LOGGING COSTS(-)	VALUE	DOLLARS PER MBF LOG SCALE		ROAD MAINT(-)	PROFIT & RISK %	MARG.* LOGS (+)	STUMPAGE	TOTAL VALUE
				LOG VALUE	LOG VALUE					
OG D. FIR	\$409.98	\$236.70	\$173.28	\$0.00	\$28.70	\$0.00	\$0.00	\$0.00	\$144.58	\$559,819.18
SG D. FIR	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
P. PINE	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
SALV.P.P.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
S. PINE	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
SALV.S.P.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
W. FIR	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
W. HEM	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
I. CEDAR	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
W.R.CEDAR	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
P.O.CEDAR	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00

* MARGINAL LOG VOLUME 0 MBF X \$135.15 /MBF = \$0.00 MARG. LOG VALUE
 \$0.00 3872 MBF = \$0.00

CURRENT POND VALUES BY GRADE SHORT LOG		SUGAR PINE		BLUE PINE ALL SPECIES	
DOUGLAS FIR					
GRADE 1	\$1,020.00	GRADE 1	\$750.00	GRADE 1	\$968.18
GRADE 2	\$892.50	GRADE 2	\$600.00	GRADE 2	\$1,500.00
GRADE 3	\$658.75	GRADE 3	\$525.00	GRADE 3	\$850.00
GRADE 4	\$569.50	GRADE 4	\$325.00	GRADE 4	\$700.00
GRADE 5	\$537.20	GRADE 5	\$325.00	GRADE 5	\$600.00
GRADE 6	\$328.95	GRADE 6	\$450.00	GRADE 6	
UC	\$135.15	W.R. CEDAR	\$410.00		
SG S-M	\$531.25	GRADE 4	\$375.00		
SG-2-M	\$465.80	GRADE 5	\$337.50		
SG-3-M	\$437.75	GRADE 6			
		WHITE FIR AND HEMLOCK			
		GRADE 3	\$450.00	GRADE 1	\$1,770.00
		GRADE 4	\$410.00	GRADE 2	\$1,500.00
		GRADE 5	\$375.00	GRADE 3	\$850.00
		GRADE 6	\$337.50	GRADE 4	\$700.00
				GRADE 5	\$600.00
		PONDEROSA PINE			
		GRADE 1	\$750.00		
		GRADE 2	\$600.00		
		GRADE 3	\$525.00		
		GRADE 4	\$325.00		
		GRADE 5	\$325.00		
		INCENSE CEDAR			
		ALL GRADE	\$512.50		
		P.O.CEDAR			
		GRADE 1	\$1,770.00		
		GRADE 2	\$1,500.00		
		GRADE 3	\$850.00		
		GRADE 4	\$700.00		
		GRADE 5	\$600.00		

TOTAL MODIFICATION VALUE-- \$559,819.18

ALT2/ROD

SEC/OI	RX	VOL/AC	CAT AC	SKY AC	HEL AC	CAT VOL	SKY VOL	HEL VOL
1/003	SGFMA	15	14	5	0	210	75	0
4/002	SGFMA	15	14	0	0	210	0	0
33/003	SGFMA	15	58	0	0	870	0	0
TOTAL			86	5	0	1290	75	0
1/004	SC	8	3	0	0	24	0	0
11/001	SC	8	0	6	0	0	48	0
11/008	SC	8	17	0	0	136	0	0
31/007	SC	8	11	0	0	88	0	0
33/003	SC	8	13	0	0	104	0	0
35/005	SC	8	0	0	14	0	0	112
TOTAL			44	6	14	352	48	112
1/004	DM	5	0	0	10	0	0	50
3/003	DM	5	24	12	0	120	60	0
5/003	DM	5	13	0	0	65	0	0
8/005	DM	5	6	0	16	30	0	80
9/002	DM	5	19	0	0	95	0	0
11/010	DM	5	0	5	0	0	25	0
17/001	DM	5	0	0	14	0	0	70
19/003	DM	5	36	0	0	180	0	0
23/779	DM	5	30	6	0	150	30	0
23/005	DM	5	13	0	0	65	0	0
27/003	DM	5	0	0	34	0	0	170
32/002	DM	5	4	0	0	20	0	0
35/006	DM	5	0	0	19	0	0	95
35/007	DM	5	68	0	0	340	0	0
35/012S	DM	5	10	0	0	50	0	0
TOTAL			223	23	93	1115	115	465
35/008	NGFMA	25	6	0	0	150	0	0
35/012N	NGFMA	25	6	0	0	150	0	0
TOTAL			12	0	0	300	0	0
GTOTAL			365	34	107	3057	238	577

SALETOT 506
VOLTOT 3872

TIMBER SALE SUMMARY CONTINUATION

(JANUARY 1997)

District: Medford
 ATSP Tract No.: 0
 Sale Name:
 FAALT2

COSTS	\$/CCF	\$/MBF
Falling & Bucking:	\$0.00	\$0.00
Yard, Load, etc.:	ERR	\$121.82
Transportation:	ERR	\$45.00
Road Construction:	ERR	\$0.00
Road Amortization:	ERR	\$0.00
Road Maintenance:	ERR	\$45.00
Other Allowances:		
Fire Protection:	\$0.00	\$0.00
Slash Disposal:	ERR	\$24.88
Site Preparation:	ERR	\$0.00
Miscellaneous:	ERR	\$0.00
		\$0.00
Total Allowances:	ERR	\$24.88
Cost to Utiliz. Ctr:	ERR	\$236.70

PROFIT & RISK ALLOWANCE

Basic Profit and Risk:	7 %
Additional Risk:	
Low (1 %)	0
Medium (2%)	0
High (3%)	0
Total Profit and Risk:	7 %

Purchaser:

Contract Number: 0

TRACT FEATURES:

Average Log D-Fir (Bd. Ft.):	0	All:	0
% Recovery D-Fir:	0	All:	0
% Salvage D-Fir:	0	All:	0
Average Volume per Acre:	7.7	MBF	
Average Yarding Slope:	0	%	
Average Yarding Distance:	0	Feet	
Average Age:		Years	
Retention Trees Per Acre:		Trees	
% Volume Cable:	6	%	
% Volume Ground Based:	79	%	
% Volume Aerial	15	%	
Utilization Center:			
Weighted Miles to Utilization Center:			40

Road Construction (100' Stations):

Class:	0	No. of Stations:	0
Class:	0	No. of Stations:	0
Class:	0	No. of Stations:	0

Road Improvement (100' Stations):

Class:	0	No. of Stations:	0
Class:	0	No. of Stations:	0
Class:	0	No. of Stations:	0

CRUISE

Cruised By:	0
Date:	0
Type of Cruise:	0%
ADP Number:	0 0

VOLUME (MBF - Net Merch)

Green:	3872	Salvage:	0
D-Fir Sawlog:	3853	Peeler:	19
Export Volume:	0		

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

District Sale Number 0

Appraisal Worksheet - Miscellaneous Costs

Fire Protection Included in Logging Costs

Fuel Treatment: See Attached Worksheet

Allowances	Total Cost		MBF	Cost per MBF
Hand Fireline Construction.....	\$0.00	+	3872	\$0.00
FMZ Fireline Construction.....	\$0.00	+	3872	\$0.00
Hand Piles and Cover.....	\$60,745.00	+	3872	\$15.69
Hand Pile Burning.....	\$5,356.00	+	3872	\$1.38
Slashing.....	\$0.00	+	3872	\$0.00
Prescribed Burning.....	\$0.00	+	3872	\$0.00
Lop and Scatter.....	\$30,225.00	+	3872	\$7.81
Girdling.....	\$0.00	+	3872	\$0.00
Swamper Burn.....	\$0.00	+	3872	\$0.00
Pullback.....	\$0.00	+	3872	\$0.00

Fuel Treatment and Reduction Total Costs = \$96,326.00 **Total per MBF** \$24.88

CO-1 Those Items Usually Included In CO-1 **Appraisal Value =** \$0.00 X 1.18 (DSC Admin. Cost)
\$0.00

Other Allowances: Summary of Costs

Site Prep Allowances	Total Cost		MBF	Cost per MBF
Ripping.....	\$0.00	+	3872	\$0.00
Skid Location and Construction.....	\$0.00	+	3872	\$0.00
Water Bar Skids.....	\$0.00	+	3872	\$0.00
Landing Cleanup.....	\$0.00	+	3872	\$0.00
End Hauling.....	\$0.00	+	3872	\$0.00
Temporary Spur Construction.....	\$0.00	+	3872	\$0.00
Landing Construction and/or Improvement.....	\$0.00	+	3872	\$0.00
Hand Seeding and/or Mulching.....	\$0.00	+	3872	\$0.00
Gross Yarding (included in Merch Yarding).....	\$0.00	+	3872	\$0.00
Chipping Operation.....	\$0.00	+	3872	\$0.00
Site Prep Costs =	\$0.00		Total per MBF	\$0.00

Miscellaneous Allowances			MBF	Cost per MBF
Deadman Anchors.....	\$0.00	+	3872	\$0.00
Stream and Culvert Cleaning.....	\$0.00	+	3872	\$0.00
Barricades and/or Guardrails.....	\$0.00	+	3872	\$0.00
Tree Blasting (Snag Replacement).....	\$0.00	+	3872	\$0.00
Down Woody or Snag Falling.....	\$0.00	+	3872	\$0.00
Watering, Cleaning and/or Dust Abatement.....	\$0.00	+	3872	\$0.00
Flaggers.....	\$0.00	+	3872	\$0.00
Bearing Trees and/or Stump Treatment.....	\$0.00	+	3872	\$0.00
0	\$0.00	+	3872	\$0.00
0	\$0.00	+	3872	\$0.00
0	\$0.00	+	3872	\$0.00
Directional Falling.....	ERR	+	3872	\$0.00
Other Miscellaneous Cost Total =	ERR		Total per MBF	\$0.00

Total Fuel, Site Prep and Miscellaneous Costs = ERR **Total per MBF** \$24.88

Optional Log Scaling \$ 0.75 per Minute Delay Cost for Scaling (4 minute delay). Total Cost = \$11,616.00

Logging Cost Summary Sheet

District Sale Number

0

Type of Logging		Total Cost	Volume Yarded	Cost per MBF
Cable	40' tower, manual falling, delimeter and loader.	\$0.00	0	\$0.00
	40' tower, manual falling and loader.	\$0.00	0	\$0.00
	50' swing yarder, manual falling and loader.	\$35,901.41	238	\$9.27
	70' tower, manual falling, delimeter and loader.	\$0.00	0	\$0.00
	70' tower, manual falling and loader.	\$0.00	0	\$0.00
	Total Cable Logging Costs		<u>\$35,901.41</u>	Total per MBF
	Total Yarded 238			
<hr/>				
Ground Based	1 Harvester and 2 forwarders (load by forwarder)	\$0.00	0	\$0.00
	Shovel logger and loader, manual falling.	\$0.00	0	\$0.00
	Feller buncher, tired skid, delimeter and loader.	\$0.00	0	\$0.00
	Track Skidder (2), manual falling and loader.	\$0.00	0	\$0.00
	Track Skidder (2), feller buncher, delmbr & Lder.	\$0.00	0	\$0.00
	Track Skidder (2), manual falling and loader.	\$277,694.17	3057	\$71.72
	Total Ground Based Logging Costs		<u>\$277,694.17</u>	Total per MBF
	Total Yarded 3057			
<hr/>				
Helicopter	Helicopter yarding, manual falling and 2 loaders.	\$158,091.53	577	\$40.83
	Helicopter yarder, 2 harvesters and 2 loaders.	\$0.00	0	\$0.00
	Total Helicopter Logging Costs	<u>\$158,091.53</u>	Total per MBF	<u>\$40.83</u>
	Total Yarded 577			
<hr/>				
	Total Logging Costs to the Truck	<u>\$471,687.11</u>	Total per MBF	<u>\$121.82</u>
	Total Yarded 3872 All Logging Systems			
<hr/>				
Transportation	Miles to the Utilization Center	40		
	RTM Miles	80		
	Total Hauling Costs		<u>\$174,240.00</u>	Total per MBF <u>\$45.00</u>
<hr/>				
	Total Logging Costs	<u>\$645,927.11</u>	Total per MBF	<u>\$166.82</u>
<hr/>				
	Total Fuel, Site Prep and Misc. Costs	ERR	Total per MBF	<u>\$24.88</u>
<hr/>				
	Cost to the Manufacturing Center	ERR	Total per MBF	<u>\$191.70</u>

SPECIES	VOLUME	LOG GRADES BY PERCENT						% CHECK TOTALS
		CODE #1	CODE #2	CODE #3	CODE #4	CODE #5	CODE #6	
OG D. FIR	3234		0.3	0.2	38.2	61.3	100	
SG D. FIR	0						0	
P. PINE	0						0	
SALV.P.P.	0						0	
S. PINE	0						0	
SALV.S.P.	0						0	
W. FIR	0						0	
W. HEM	0						0	
I. CEDAR	0						0	
W.R.CEDAR	0						0	
P.O.CEDAR	0						0	

LOGGING COST PER MBF FROM LOGGING WORKSHEET \$241.63
 ANY MARGINAL LOG VOLUME ??? 0
 ROAD MAINTENANCE & ROCKWEAR /M \$0.00
 PROFIT & RISK (TYPE 7 UP TO 10) 7 % STUMPAGE COMPUTATION

DOLLARS PER MBF LOG SCALE

SPECIES	POND VALUE	LOGGING COSTS(-)	VALUE	ROAD MAINT(-)	PROFIT & RISK %	MARG.* LOGS (+)	STUMPAGE	TOTAL VALUE
OG D. FIR	\$409.98	\$241.63	\$168.35	\$0.00	\$28.70	\$0.00	\$139.65	\$451,632.63
SG D. FIR	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00		\$0.00	\$0.00
P. PINE	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00		\$0.00	\$0.00
SALV.P.P.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00		\$0.00	\$0.00
S. PINE	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00		\$0.00	\$0.00
SALV.S.P.	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00		\$0.00	\$0.00
W. FIR	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00		\$0.00	\$0.00
W. HEM	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00		\$0.00	\$0.00
I. CEDAR	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00		\$0.00	\$0.00
W.R.CEDAR	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00		\$0.00	\$0.00
P.O.CEDAR	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00		\$0.00	\$0.00
							TOTAL MODIFICATION VALUE--	\$451,632.63

* MARGINAL LOG VOLUME 0 MBF X \$135.15 /MBF = \$0.00 MARG. LOG VALUE

CURRENT POND VALUES BY GRADE SHORT LOG		MARG. LOG VALUE	
DOUGLAS FIR	PONDEROSA PINE	SUGAR PINE	BLUE PINE ALL SPECIES
GRADE 1 \$1,020.00	GRADE 1 \$750.00	GRADE 1 \$968.18	\$225.00
GRADE 2 \$892.50	GRADE 2 \$600.00	GRADE 2 \$774.54	INCENSE CEDAR
GRADE 3 \$658.75	GRADE 3 \$525.00	GRADE 3 \$619.07	ALL GRADE \$512.50
GRADE 4 \$569.50	GRADE 4 \$325.00	GRADE 4 \$325.00	
GRADE 5 \$537.20	GRADE 5 \$325.00	GRADE 5 \$325.00	P.O.CEDAR
GRADE 6 \$328.95	WHITE FIR AND HEMLOCK		GRADE 1 \$1,770.00
UC \$135.15	GRADE 3 \$450.00	W.R. CEDAR	GRADE 2 \$1,500.00
SG S-M \$531.25	GRADE 4 \$410.00	GRADE 4 \$782.85	GRADE 3 \$850.00
SG-2-M \$465.80	GRADE 5 \$375.00	GRADE 5 \$771.80	GRADE 4 \$700.00
SG-3-M \$437.75	GRADE 6 \$337.50	GRADE 6 \$531.25	GRADE 5 \$600.00

ALT3/CR

SEC/OI	RX	VOL/AC	CAT AC	SKY AC	HEL AC	CAT VOL	SKY VOL	HEL VOL	VOL
33-003	SGFMA	15	17	0	0	255	0	0	
35-012N	NGFMA	25	6	0	0	150	0	0	
1-003	SC	8	14	5	0	112	40	0	
1-004	SC	8	3	0	0	24	0	0	
4-002	SC	8	14	0	0	112	0	0	
11-001	SC	8	0	6	0	0	48	0	
11-008	SC	8	17	0	0	136	0	0	
31-007	SC	8	11	0	0	88	0	0	
33-003	SC	8	54	0	0	432	0	0	
35-005	SC	8	0	0	14	0	0	112	
TOTAL	SC		113	11	14	904	88	112	
1-004	DM	5	0	0	10	0	0	50	
3-003	DM	5	24	12	0	120	60	0	
5-003	DM	5	13	0	0	65	0	0	
8-005	DM	5	6	0	16	30	0	80	
9-002	DM	5	19	0	0	95	0	0	
11-010	DM	5	0	5	0	0	25	0	
17-001	DM	5	0	0	14	0	0	70	
19-003	DM	5	36	0	0	180	0	0	
23-779	DM	5	30	6	0	150	30	0	
23-005	DM	5	13	0	0	65	0	0	
27-003	DM	5	0	0	34	0	0	170	
32-002	DM	5	4	0	0	20	0	0	
35-006	DM	5	0	0	19	0	0	95	
35-007	DM	5	68	0	0	340	0	0	
35-008	DM	5	6	0	0	30	0	0	
35-012S	DM	5	10	0	0	50	0	0	
TOTAL	DM		229	23	93	1145	115	465	
TOTALS			365	34	107	2454	203	577	
SALE AC	506								
VOL TOT	3234								

TIMBER SALE SUMMARY CONTINUATION

(JANUARY 1997)

District: Medford
 ATSP Tract No.: 0
 Sale Name:
 FAALT3

COSTS	\$/CCF	\$/MBF
Falling & Bucking:	\$0.00	\$0.00
Yard, Load, etc.:	ERR	\$136.13
Transportation:	ERR	\$45.00
Road Construction:	ERR	\$0.00
Road Amortization:	ERR	\$0.00
Road Maintenance:	ERR	\$45.00
Other Allowances:		
Fire Protection:	\$0.00	\$0.00
Slash Disposal:	ERR	\$15.50
Site Preparation:	ERR	\$0.00
Miscellaneous:	ERR	\$0.00
		\$0.00
Total Allowances:	ERR	\$15.50
Cost to Utiliz. Ctr:	ERR	\$241.63

PROFIT & RISK ALLOWANCE

Basic Profit and Risk:	7 %
Additional Risk:	
Low (1 %)	0
Medium (2%)	0
High (3%)	0
Total Profit and Risk:	7 %

Purchaser: _____

Contract Number: 0

TRACT FEATURES:

Average Log D-Fir (Bd. Ft.):	0	All:	0
% Recovery D-Fir:	0	All:	0
% Salvage D-Fir:	0	All:	0
Average Volume per Acre:	6.4	MBF	
Average Yarding Slope:	0	%	
Average Yarding Distance:	0	Feet	
Average Age:		Years	
Retention Trees Per Acre:		Trees	
% Volume Cable:	6	%	
% Volume Ground Based:	76	%	
% Volume Aerial	18	%	
Utilization Center:			
Weighted Miles to Utilization Center:	0		

Road Construction (100' Stations):

Class:	0	No. of Stations:	0
Class:	0	No. of Stations:	0
Class:	0	No. of Stations:	0

Road Improvement (100' Stations):

Class:	0	No. of Stations:	0
Class:	0	No. of Stations:	0
Class:	0	No. of Stations:	0

CRUISE

Cruised By:	0
Date:	0
Type of Cruise:	0%
ADP Number:	0 0

VOLUME (MBF - Net Merch)

Green:	3234	Salvage:	0
D-Fir Sawlog:	3234	Peeler:	0
Export Volume:	0		

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

District Sale Number 0

Appraisal Worksheet - Miscellaneous Costs

Fire Protection Included in Logging Costs

Fuel Treatment: See Attached Worksheet

Allowances	Total Cost		MBF	Cost per MBF
Hand Fireline Construction.....	\$0.00	+	3234	\$0.00
FMZ Fireline Construction.....	\$0.00	+	3234	\$0.00
Hand Piles and Cover.....	\$12,534.00	+	3234	\$3.88
Hand Pile Burning.....	\$1,357.00	+	3234	\$0.42
Slashing.....	\$0.00	+	3234	\$0.00
Prescribed Burning.....	\$0.00	+	3234	\$0.00
Lop and Scatter.....	\$36,225.00	+	3234	\$11.20
Girdling.....	\$0.00	+	3234	\$0.00
Swamper Burn.....	\$0.00	+	3234	\$0.00
Pullback.....	\$0.00	+	3234	\$0.00

Fuel Treatment and Reduction Total Costs = \$50,116.00 **Total per MBF** \$15.50

CO-1 Those Items Usually Included In CO-1 Appraisal Value = \$0.00 X 1.18 (DSC Admin. Cost) \$0.00

Other Allowances: Summary of Costs

Site Prep Allowances	Total Cost		MBF	Cost per MBF
Ripping.....	\$0.00	+	3234	\$0.00
Skid Location and Construction.....	\$0.00	+	3234	\$0.00
Water Bar Skids.....	\$0.00	+	3234	\$0.00
Landing Cleanup.....	\$0.00	+	3234	\$0.00
End Hauling.....	\$0.00	+	3234	\$0.00
Temporary Spur Construction.....	\$0.00	+	3234	\$0.00
Landing Construction and/or Improvement.....	\$0.00	+	3234	\$0.00
Hand Seeding and/or Mulching.....	\$0.00	+	3234	\$0.00
Gross Yarding (included in Merch Yarding).....	\$0.00	+	3234	\$0.00
Chipping Operation.....	\$0.00	+	3234	\$0.00
Site Prep Costs =	\$0.00		Total per MBF	\$0.00

Miscellaneous Allowances

Deadman Anchors.....	\$0.00	+	3234	\$0.00
Stream and Culvert Cleaning.....	\$0.00	+	3234	\$0.00
Barricades and/or Guardrails.....	\$0.00	+	3234	\$0.00
Tree Blasting (Snag Replacement).....	\$0.00	+	3234	\$0.00
Down Woody or Snag Falling.....	\$0.00	+	3234	\$0.00
Watering, Cleaning and/or Dust Abatement.....	\$0.00	+	3234	\$0.00
Flaggers.....	\$0.00	+	3234	\$0.00
Bearing Trees and/or Stump Treatment.....	\$0.00	+	3234	\$0.00
0	\$0.00	+	3234	\$0.00
0	\$0.00	+	3234	\$0.00
0	\$0.00	+	3234	\$0.00
Directional Falling.....	ERR	+	3234	\$0.00

Other Miscellaneous Cost Total = ERR **Total per MBF** \$0.00

Total Fuel, Site Prep and Miscellaneous Costs = ERR **Total per MBF** \$15.50

Optional Log Scaling \$ 0.75 per Minute Delay Cost for Scaling (4 minute delay). **Total Cost =** \$9,702.00

Logging Cost Summary Sheet

District Sale Number

0

Type of Logging		Total Cost	Volume Yarded	Cost per MBF
Cable	40' tower, manual falling, delimber and loader.	\$0.00	0	\$0.00
	40' tower, manual falling and loader.	\$0.00	0	\$0.00
	50' swing yarder, manual falling and loader.	\$32,250.91	203	\$9.97
	70' tower, manual falling, delimber and loader.	\$0.00	0	\$0.00
	70' tower, manual falling and loader.	\$0.00	0	\$0.00
Total Cable Logging Costs		\$32,250.91	Total per MBF	\$9.97
Total Yarded			203	
<hr/>				
Ground Based	1 Harvester and 2 forwarders (load by forwarder)	\$0.00	0	\$0.00
	Shovel logger and loader, manual falling.	\$0.00	0	\$0.00
	Feller buncher, tired skid, delimber and loader.	\$0.00	0	\$0.00
	Track Skidder (2), manual falling and loader.	\$0.00	0	\$0.00
	Track Skidder (2), feller buncher, delmbr & Lder.	\$0.00	0	\$0.00
	Track Skidder (2), manual falling and loader.	\$252,186.44	2454	\$77.98
Total Ground Based Logging Costs		\$252,186.44	Total per MBF	\$77.98
Total Yarded			2454	
<hr/>				
Helicopter	Helicopter yarding, manual falling and 2 loaders.	\$155,825.24	577	\$48.18
	Helicopter yarder, 2 harvesters and 2 loaders.	\$0.00	0	\$0.00
	Total Helicopter Logging Costs		\$155,825.24	Total per MBF
Total Yarded			577	
<hr/>				
Total Logging Costs to the Truck		\$440,262.59	Total per MBF	\$136.13
Total Yarded			3234 All Logging Systems	
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Transportation	Miles to the Utilization Center		0	
	RTM Miles		0	
	Total Hauling Costs		\$145,530.00	Total per MBF
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Total Logging Costs		\$585,792.59	Total per MBF	\$181.13
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Total Fuel, Site Prep and Misc. Costs		ERR	Total per MBF	\$15.50
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Cost to the Manufacturing Center		ERR	Total per MBF	\$196.63

