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

ENVIRONMENTAL ASSESSMENT FOR BIEBER WASSON

Project Name/Number: OR-110-99-15

Project Location: T. 35S., R.2E., Sections 29, 33, & 35
T. 36S., R.2E., Sections 1, 2, 3, 11, 12, 13, 23, 24, & 25
T. 36S., R.3E., Sections 7, 19, 20, 29, and 32
Willamette Meridian, Jackson County, Oregon

Project Lead: John Bergin, Planner
EA Preparation: Jean Williams, Environmental Coordinator

This environmental assessment (EA) for **Bieber Wasson** was prepared utilizing a systematic interdisciplinary approach integrating the natural and social sciences and the environmental design arts with planning and decision making.

Lance E. Nimmo
Butte Falls Field Manager

Date 8/1/00

The environmental assessment and Finding of No Significant Impact (FONSI) were made available for public review on July 28, 2000.

APPENDICES

Appendix

A. Cultural Resources

B. Plants (Sensitive, Survey & Manage, and Threatened & Endangered)

C. Wildlife

D. Table II (Roads)

E. Silvicultural Prescription

F. Marking Guidelines

G. Aquatic Habitat Restoration

H. Douglas-fir Mistletoe Rating System

I. Stand Inventory Summary

J. Fence Project

K. Fuels Hazard Project

INTRODUCTION

The Butte Falls Resource Area (BFRA) proposes to implement forest management activities in the Little Butte and Big Butte Creek Watersheds, which include timber harvest, road maintenance work, fuel treatment, replacing undersized culverts for fish passage, instream log placement, and fencing a spring. The total analysis area is 51,855 acres in size. The BLM manages 17,702 acres (34 percent) of the analysis area; the U.S. Forest Service manages approximately 1,400 acres (3 percent); the remaining 32,753 acres (63 percent) are private lands. All timber harvesting would occur within Matrix lands. The road work would occur within 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 the Environmental Assessment (EA) is to analyze the effects of harvesting timber, fuel treatments (e.g., handpile and burn, slash busting with a rotary head chipper, and underburn), fencing a spring, replacing undersized culverts for fish passage, and road related projects (e.g., road upgrades, road closures) from this analysis area. The proposed actions would contribute to the District's decadal Probable Sale Quantity (PSQ).

Action is needed to implement the goals, objectives, and desired future condition on Matrix lands as described in the Record of Decision for the Northwest Forest Plan, the Medford District's Resource Management Plan, Watershed Analysis for Little and Big Butte Creek, and the Watershed Analysis and Management Plan for BLM Lands within the Ginger Springs Recharge Area (see Table 1).

Many forest stands in the watershed are in need of treatment to improve tree vigor and growth. Conditions are variable; some stands have more trees than the site can sustain while other stands have numerous trees that are declining and at high risk of mortality due to mistletoe infection, moisture limitations, insects, or root diseases.

To improve tree vigor and growth, combinations of the following silvicultural methods are proposed:

1. Density Management: Thinning would increase spacing between trees, creating conditions similar to the effects of a light underburn that would have killed smaller diameter trees. Removal of smaller and less vigorous trees would reduce competition and provide additional moisture and nutrients for the remaining dominant and co-dominant trees. Depending on the alternative selected, canopy closure would be approximately 40 percent to 70 percent following treatment.

2. Selective cut: Density levels would be reduced towards the carrying capacity of the site. Individual trees across all diameter sizes would be removed to reduce inter-tree competition for

light, moisture, and nutrients. Canopy openings would be created, allowing for the establishment of small trees as well as providing stand diversity. Depending on the alternative selected, canopy closure would be approximately 40 percent to 70 percent following treatment. Multiple canopy layers and structural diversity would be maintained or enhanced. Large trees would be present and provide for long term biological legacies.

3. Regeneration harvests would occur in deteriorating stands and stands with Douglas-fir trees heavily infested with mistletoe. Combinations of four different silvicultural regeneration systems are proposed.

a). Structural retention: A minimum of 16-25 trees per acre greater than 20 inches in diameter at breast height (dbh) would remain following entry. Canopy closure would be approximately 25-40 percent. Planting of conifer seedlings would occur following harvest.

b). Shelterwood retention: A minimum of 12-25 trees per acre greater than 20 inches dbh would remain following entry. Canopy closure would be approximately 20-40 percent. Planting of conifer seedlings would occur following harvest.

c). Connectivity modified even-aged: A minimum of 12-18 trees per acre greater than 20 inches dbh would remain following entry. Canopy closure would be approximately 20-30 percent. Planting of conifer seedlings would occur following harvest.

d). Modified even-aged: A minimum of 6-8 trees per acre greater than 20 inches dbh would remain following entry. Canopy closure would be approximately 10-15 percent. Planting of conifer seedlings would occur following harvest.

4. Mortality salvage; individual and groups (2 acres and less in size) of trees in deteriorating stands would be removed. Trees removed would be of low vigor, insect infested or Douglas-fir trees with a mistletoe rating of 4, 5, or 6. Canopy closure following entry would be approximately 60-70%.

Common to all silvicultural methods, large sugar and ponderosa pine trees would be released from competition from surrounding shrubs and trees. The objective is to maintain the genetic and structural legacies of pine species by reducing their susceptibility to pine beetle attack.

Roads

For a more detailed description see Appendix D.

There are approximately 81 miles of BLM and Agreement Company roads with access for BLM under the M-250 and M-660 Reciprocal R/W Agreement analyzed for in this EA. Of these, 58 miles of road are surfaced and 23 miles of road are unsurfaced.

Most of the area is accessed via the 14 mile long Salt Creek Road, plus its associated tributaries, and the 7 mile long Wasson Canyon Road, plus its associated tributaries.

There are no major road problems identified except for fish passage and road density. Major slide problems and fill slope failures often found in mountainous terrain are not common to this

area. Generally the roads do not cross a lot of headwall terrain and the more gentle side slopes contribute favorably to the stability of the road on the landscape.

Operator Spur Construction - One operator spur is needed for access. After harvesting, the spur would be fully decommissioned.

Renovation or Renovate - 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, ditching, 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 62 miles of road. There also, would be brushing on an additional 11 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 approximately 3.5 miles of road.

Road Decommissioning - These actions would be based on resource protection goals identified in watershed analysis and the RMP directives. The road segment would be closed to vehicles on a long-term basis but may be used again in the future. Prior to closure, the road would be prepared to avoid future maintenance needs; the road would be left in an "erosion-resistant" condition by establishing self maintaining drainage structures. Exposed soils would be revegetated by seeding with native grasses and/or planting conifers to reduce sedimentation. The road would be closed with a device similar to an earthen barrier (tank trap) or equivalent. These actions would occur on approximately 2.2 miles of road.

Road Full Decommissioning - Roads determined through an interdisciplinary process to have no future need will be subsoiled (or ripped), seeded, 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 (tank trap) or equivalent. The road would not require future maintenance. These actions would occur on approximately 3.4 miles of road.

Aquatic Habitat Restoration
For a more complete description see Appendix G.

Large Wood Placement: The objective of the large wood placement is to restore and improve fish habitat complexity and to provide improved spawning and rearing areas for native salmonids in the Lick Creek system. Actions to complete this project would include placing a total of 24-30 logs between 16-21 inches dbh, over a 1/4 mile section of stream. The size class of the logs used in this project would be approximately one and one half times the width of the active stream

channel. Because of the size and length of these pieces and the positioning of the structures between streamside trees, it is anticipated that very little cabling will be necessary. Key pieces used would have root wads left intact to serve as anchor points. Logs would be arranged in a pattern that mimics natural large wood locations and debris accumulations. Trees to be used in the project have been decked at the project site. Tree placement would be completed with an excavator or other machinery. Access to the site will be on an existing natural surface road. The equipment will be "walked" over the surface from the road to the stream bank over approximately 500 ft. of ground. The project would occur on BLM at T. 35S R.1E sec. 35.

Culvert Replacement/Removals: The objective of culvert replacement is to restore fish habitat connectivity. Actions to complete this would include removing an existing culvert at the Lick Creek stream crossing under the 35S-1E-35 road and replacing it with a bottomless arch or similar structure to allow for a natural stream bottom. This action would restore passage of approximately 3.5 miles of habitat above the existing culvert for coho salmon, steelhead, and other resident salmonids. In addition, approximately 13 culverts would be removed and the natural stream contours restored as part of the process of full road decommissioning

Fuels Hazard Reduction
For a more complete description see Appendix K.

The proposed projects are located in T35S, R1E, sections 26,27,&35; T35S, R2E, sections 29, 32, & 33; T36S, R1E, section 1; T36S, R2E, sections 3 & 5. The objectives of the proposed projects are to mechanically crush the vegetation the first season followed by a broadcast burn in the spring or fall of the following season. The project goals are to utilize fire in the ecosystem as a disturbance agent, reduce the amount of fuels on the site to reduce potential for catastrophic fire, improve forage values for big game species, and maintain important vegetative communities such as oak woodlands.

The proposed project targets an area comprised of three main vegetative communities; a chaparral vegetative community dominated by buckbrush (Ceanothus cuneatus), deerbrush (*Ceanothus integerrimus*), manzanita (*Arctostaphylos viscida*), and Madrone (*Arbutus menzeseii*), the oak/idaho fescue (*Quercus garryana/Festuca idahoensis*) vegetative community, and the mixed conifer plant association that includes hardwoods and conifers. The majority of the oak/fescue and ceanothus/manzanita plant community has not been disturbed by fire, grazing or human activity within the recent past. This E.A. analyzes the expected impacts of the proposed project to the major plant associations.

Fuels treatments will consist of multiple entries designed to reduce existing fuel loadings over time to levels that would approximate natural levels. Fuels treatments will consist of three treatment methods: (locations shown on map)

Fence Construction Around Spring
For a more complete description see Appendix J.

A fence would be constructed around a spring in T36S, R3E, section 31 to protect a perennial headwater spring and an undescribed aquatic snail (*Flumminicola sp*.) from grazing impacts. An exclosure would be constructed that prevents cattle from trampling and disturbing the spring, streambed and riparian vegetation where the aquatic snail population is found.

Table 1. Project Objectives

- Increase growth, quality, and vigor of individual trees (Little Butte Creek Watershed Analysis p. 185)
- Design silvicultural prescriptions to manage dwarf mistletoe infestations (Little Butte Creek Watershed Analysis p. 186)
- Provide a sustainable supply of timber. (Medford District Resource Management Plan, p. 72)
- Reduce the risk of road generated sediment. (Little Butte Creek Watershed Analysis pp. 177-178)
- Minimize adverse impacts to soils. Maintain or improve long-term soil productivity. (Medford District Resource Management Plan, p. 44; Little Butte Creek Watershed Analysis p. 182)
- Manage vegetation within the Transient Snow Zone (TSZ) to minimize large openings. (Little Butte Watershed Analysis pp. 207-208, Ginger Springs Watershed Analysis and Management Plan p. 34)
- Restore oak woodlands through prescribed fire and appropriate silvicultural methods. (Little Butte Watershed Analysis p.190)
- Improve/increase fish habitat and connectivity in streams. (Little Butte Creek Watershed Analysis pp. 193-199)
- Promote long-term resistance of the lower and mid elevation areas to stand replacement wildfires by reducing the fuel hazard. (Little Butte Creek Watershed Analysis pp. 189-190, p.206)

A. Conformance With Existing Land Use Plans

The proposed timber harvest and other projects are in conformance with the BLM land use plans for the subject areas. The proposed harvest is consistent with management objectives and silvicultural systems for the 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, and the Record of Decision and Resource Management Plan for the Medford District (RMP), approved June 1995.

All of the acreage (2054 acres) proposed for harvest has been identified as Matrix lands. As defined in the SEIS (page C-39) and the RMP (pages 38-40), the Matrix consists 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 Environmental Impact Statements (EISs) prepared in conjunction with the SEIS and the RMP included analysis of this land use allocation. Unless site-specific inventory or analysis determines timber harvesting is not suitable based on the existence of resource values (e.g., cultural resources, habitat for threatened and endangered species), this document would not readdress the suitability of Matrix lands for timber harvesting, but rather the appropriate intensity and method of harvesting and conformance of the proposed harvesting within the standards and guidelines.

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.

Finally, the EA is also 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 should harvest trees, close roads, replace undersized culverts for fish passage, conduct fuel treatments, and fence a spring in the Little Butte Creek watershed, and which areas would be treated.

If the decision maker should decide to select one of the action alternatives, the analysis in this EA will 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 to the interested publics. The letter requested comments concerning issues that would be addressed in the Environmental Assessment. Responses are on file in the Butte Falls Resource Area, Medford BLM.

E. Issues

1. Issues Considered But Not Analyzed in Detail

Many issues were discussed during the interdisciplinary team (IDT) meetings for these proposals. (See Chapter V for a list of preparers). After discussing the issues, the IDT determined that while these issues and concerns were real, many were outside the scope of the EA and others were not major issues for this proposal that would affect the human environment. For a more in depth discussion of these issues, see Appendices.

2. Pre-project Inventories, Surveys and Reviews

a) Cultural resources--locations would be protected. (Appendix A)

b) Wildlife - T&E Sensitive species--spotted owl activity centers would not be entered. Appropriate seasonal restrictions would be implemented.
Survey & Manage species -- Great gray owl would be protected with a 1/4 mile protection buffer. Surveys were completed in 1998. No Red tree voles were found and surveys were completed in 1998. Mollusk surveys were completed in Spring 2000. Blue grey taildropper sites would be protected based on the following table:

Blue Gray Tail Dropper Management Strategy

Proposed treatment	Protection buffer	Justification
≥ 60% canopy retention/ commercial thin select cut.	No-cut 25' radius around perimeter of population; protect "hot spots"	Blue gray taildroppers have been found in areas with less than 60% canopy. 50' buffer would protect the site and canopy would be maintained through the stand.
40-60% canopy retention	No cut 50' radius around perimeter of population; protect "hot spots"	Protection of a 100' area. Suitable conditions may be achieved with canopy closure from 50-70% (allowing ± 10% fluctuations)
Regeneration harvest (north and east slope)	1 site potential tree (170') radius	North and east aspects are cooler and moister, and this would be expected to protect the site.
Regeneration harvest (south and west aspect slopes)	2 site potential tree (340') radius	South aspects are hotter and drier and the larger buffer would be expected to protect the site. Buffer is approx. 10 acres

For more information see Appendix C.

c) Visual Resources Management (VRM)--meets RMP VRM standards
d) Mining--no active mining claims in the area
e) Road Closures (Appendix D)
f) Special Status Vascular Plant and Survey and Manage Vascular Plants-- Pre-project surveys were completed on project areas in 1998, 1999 and 2000 in the following sections:

T35S, R2E, sections 21, 23, 25, 27, 29, 32, & 35
T36S, R1E, section 1
T36S, R2E, sections 1, 2, 3, 11, 12, 13, 23, & 25
T36S, R3E, sections 7, 19, 20, 29, 32

Surveys for S&M vascular plants have also been completed for timber harvest units proposed in T35S, R2E, section 33. Surveys for the remaining fuel treatment Areas will be completed in 2001 and mitigation measures would be implemented before the project Record of Decision is signed. Following are tables showing species, number of sites, and

mitigation/management strategy:

SPECIAL STATUS VASCULAR PLANTS

SPECIES	SURVEY STRATEGY	NUMBER OF SITES	GENERAL DESCRIPTION OF POPULATION	MITIGATION / MANAGEMENT STRATEGY
Cypripedium fasciculatum	S&M 1,2 BSO	1	Single individual population.	1. Population buffered with 100-300 feet buffers
Cypripedium montanum	S&M 1,2 BTO	19	Single individuals, scattered clusters, to extensive large areas.	1. Discovered outside unit. 2. Protected within Riparian Reserve. 3. Unit or portions of units dropped. 4. Population buffered with 100-300 feet buffers
Plagiobothrys glyptocarpus	BAO	1	Annual species associated with riparian zones on igneous substrate.	1. Protected within Riparian Reserve

g) Survey and Manage and Protection Buffer Non-vascular Plants and Fungi:
Surveys have been completed according to survey protocol standards for S&M category 2 and Protection Buffer fungi, bryophytes, lichens whose known range and habitat includes the project area. Non-vascular plants and fungi surveys were completed between 1999 and 2000 in the following sections:

T35S, R2E, sections 21, 23, 25, 27, 29, 32, & 35
T36S, R1E, section 1
T36S, R2E, sections 1, 2, 3, 11, & 12
T36S, R3E, sections 7,& 20

Surveys for S&M fungi and non-vascular plants have also been completed for timber harvest units proposed in T35S, R2E, section 33. The remaining spring fungi and non-vascular plant surveys would be completed in 2001 and mitigation measures would be implemented before the project Record of Decision is signed. See Appendix B for complete list of Survey and Manage species encountered and areas lacking surveys.

Protection measures for S&M category 1, 2 and PB plant and fungi sites discovered during survey were developed in accordance with Management Recommendations. An array of protection measures were developed by species based upon site specific conditions that ranged from dropping units or portions of units to creating protection buffers ranging from 100 feet to 300 feet depending upon aspect, slope, elevation, forest type, and silvicultural prescription.

The following list includes positive results of S&M plant and fungi species discovered during surveys completed in 1998, 1999 and 2000 that require protection. A complete list of S&M plant and fungi species and negative results are included in appendix B.

PROTECTION BUFFER SPECIES TABLE

SPECIES	SURVEY STATEGY	NUMBER OF SITES	GENERAL DESCRIPTION OF POPULATION	MITIGATION - MANAGEMENT STRATEGY
Sarcasoma mexicana	Protection Buffer	69	Single individual bodies to large groups or scattered clusters. Wide variety of conifer forest habitats.	1. Discovered outside unit. 2. Protected within Riparian Reserve. 3. Unit or portions of units dropped. 4. Population buffered with 100-300 feet buffers
Buxbaumia viridis	Protection Buffer	1	Single individual site. Found under dense, shady, humid coniferous forests generally on logs & stumps in advanced stages of decay.	1. Population buffered with 100 foot buffer.
Ptilidium californicum	Protection Buffer	45	Single individual sites to extensive large areas, generally found at the base of large diameter conifers.	1. Discovered outside unit. 2. Protected within Riparian Reserve. 3. Unit or portions of units dropped. 4. Population buffered with 100-300 feet buffers

PLANT GROUP - LICHEN

SPECIES	SURVEY STRATEGY	NUMBER OF SITES	GENERAL DESCRIPTION OF POPULATION	MITIGATION - MANAGEMENT STRATEGY
Dendriscocaulon intriculatum	S&M 1,3	7	Single individual sites. Mixed hardwood conifer forest stands on black oak.	Limit flame lengths and intensity in populated areas or establish 100 foot buffers. 100 foot buffer around population in Timber Sales
Bryoria tortuosa	S&M 1,3	2	Generally large populations over many acres of area. Generally, occurring in oak woodland and mixed hardwood/conifer community on bark or wood of hardwood or conifers, semi-open conifer stands at low elevation transitional areas between mesic conifer forest communities and xeric hardwood forests.	Limit flame lengths and intensity in populated areas or establish 100 foot buffers. 100 foot buffer around population in Timber Sales
Leptogium rivale	S&M 1,3	3	Small populations restricted to specific habitat. Aquatic lichen found in intermittent and perennial streams.	1. Full riparian reserve buffers.
Lobaria hallii	S&M 1,3	5	Generally ,single individual sites. Conifer and Conifer/Hardwood Mature-Old Growth Forest Stands. Host trees on hardwoods in low- to mid-elevation riparian forests.	Limit flame lengths and intensity in populated areas or establish 100 foot buffers. 100 foot buffer around population in Timber Sales

GROUP - FUNGI

SPECIES	SURVEY STATEGY	NUMBER OF SITES	GENERAL DESCRIPTION OF POPULATION	MITIGATION - MANAGEMENT STRATEGY
Bondarzewia mesenterica	S&M 1,2,3	13	Single individual sites to clustered sites. Found in or around large conifer tree stumps (*PIPO* in BFRA) in late-successional coniferous forests	1. Discovered outside unit. 2. Protected within Riparian Reserve. 3. Unit or portions of units dropped. 4. Population buffered with 100-300 feet buffers
Helvella compressa	S&M 1,3	2	Single individual sites to clustered sites. Found in late-successional coniferous forests	1. Population buffered with 100-200 feet buffers
Helvella maculata	S&M 1,3	10	Single individual sites to clustered sites. Found in late-successional coniferous forests	1. Population buffered with 100-200 feet buffers
Plectania milleri	S&M 1,3	40	Single individual sites to clustered sites. Found on moss and duff in late-successional coniferous forests.	1. Discovered outside unit. 2. Protected within Riparian Reserve. 3. Unit or portions of units dropped. 4. Population buffered with 100 feet buffers
Pithya vulgaris	S&M 1,3	14	Single individual sites. Found on branches under white fir conifers in late-successional coniferous forests.	1. Discovered outside unit. 2. Protected within Riparian Reserve. 3. Unit or portions of units dropped. 4. Population buffered with 100 feet buffers
Ramaria rubripermanens	S&M 1,3	5	Single individual sites. Found on moss and duff in late-successional coniferous forests.	1. Population buffered with 100-300 feet buffers
Ramaria rubrievanescens	S&M 1,3	2	Single individual sites. Found inforest floor soil in late-successional coniferous forests.	1. Population buffered with 100-300 feet buffers
Ramaria thiersii	S&M 1,3	2	Single individual sites. Found in forest floor soil in late-successional coniferous forests.	1. Population buffered with 100-300 feet buffers

2. 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 in Table 2. Indicators or measurements are suggested that may be used to compare how the alternatives address the issues. Chapter II contains a comparison summary of the alternatives and their response to the issues.

Table 2. ISSUES TO BE ANALYZED IN DETAIL

Issue 1: Dense Forest Stands and Dwarf Mistletoe Infestation of Douglas-fir

Ž The stands proposed for thinning and selective harvest have more trees than the site can sustain. Removal of competing and low vigor trees would reduce competition and provide additional site resources (nutrients, water, sunlight) for the remaining trees. The stands proposed for regeneration harvest are deteriorating or have Douglas-fir trees that are heavily infested with mistletoe; these conditions are threatening the integrity of the stand. High densities and mistletoe infestation result in declining tree vigor and growth, tree mortality, and an increased susceptibility to insect attack, root disease infection, and fire. The stands proposed for mortality salvage are deteriorating or have Douglas-fir tree that are heavily infested with mistletoe. Trees would be removed individually or in groups that are 2 acres or less in size.

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: Cumulative Impacts

Ž The TSZ is an elevation band (3500-4500 feet) where snow pack can accumulate in non-recovered openings (less than 60-70 percent canopy cover in forested areas) and is at a high risk for a rain-on-snow occurrence. Typically, rain-on-snow events produce flood conditions which can severely alter stream channel morphology and degrade aquatic habitat. Activities such as timber harvest and road and landing construction increase the amount of openings in the tree canopy where snow can accumulate. This can increase the magnitude of runoff in a rain-on snow event.

Indicators for measuring this issue are:

- Percent of total watershed acres within the TSZ that have less than 60-70 percent canopy cover
- *Size and spatial distribution of openings in the TSZ*

Issue 3: **Aquatic Habitat/Water Quality**

Ž Aquatic habitat conditions in the Little Butte Creek drainage are generally in moderate to poor condition. Habitat features documented as impaired are summer stream temperatures, sedimentation levels, riparian condition, stream channel condition, and fish passage. Overall, these would be expected to result in low freshwater survival of salmonid species. In general, instream habitat and riparian restoration is likely to improve the current condition of streams. Additionally, the lack of regular road and stream crossing maintenance has created conditions where fine sediment from roads has a higher potential of being delivered to streams from road surface erosion and road and culvert failure. These factors could lead to a potential increase in levels of fine sediment.

Indicators for measuring this issue are:

- *Anticipated degree of change in current aquatic habitat conditions*
- *Anticipated degree of change in current freshwater survival rates of salmonid species*
- *Miles of road maintenance, road improvement, and road decommissioning*
- *Number of stream crossings improved, or eliminated*
- *Anticipated degree in fine sediment levels from current conditions*

Issue 4: Fuels Hazard Reduction

Ž *There currently exists high fuels buildup and an increasing probability of large or stand replacement fires.*

Indicators for measuring this issue are:

- *Acres treated*
- *Acres treated within High Risk Zones*
- *Change in fuel model*
- *Reduction in flame lengths and fire intensities*
- *Reduction in resistance to control for wildfires*

II. ALTERNATIVES INCLUDING THE PROPOSED ACTION

A. Introduction

The Butte Falls Resource Area has developed three action alternatives to achieve the project objectives in the Little Butte Creek Watershed Analysis (refer to pages 204-208). After receiving comments from the public through the scoping process, the alternatives were developed by a team of resource specialists. The Little 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.

In this chapter you will find:

A description of the no-action alternative;
A description of the features common to all action alternatives;
A description of each action alternative;
A comparison of how each alternative affects the major issues listed in Chapter I.

See Table 3 for a summarized description of the selected alternatives.

TABLE 3: DESCRIPTION OF THE ALTERNATIVES

Action	Alternative 1 No Action	Alternative 2 Dwarf Mistletoe Infestation	Alternative 3 Canopy Retention	

Timber Harvest:				
Total area (Matrix) treated:	0 acres	1864 acres	1642 acres	1901 acres
Estimated volume	0 MBF	18,200 MBF	10,600 MBF	15,660 MBF
Logging methods:				
* tractor	0 acres	1284 acres	1172 acres	1321 acres
* cable	0 acres	302 acres	225 acres	302 acres
* helicopter	0 acres	278 acres	245 acres	278 acres
Silvicultural Method:				
* density management	0 acres	1053 acres	199 acres	423 acres
* density management -high canopy closure	0 acres	0 acres	826 acres	630 acres
* selective cut	0 acres	63 acres	26 acres	35 acres
* structural retention	0 acres	142 acres	8 acres	47 acres
* shelterwood retention	0 acres	66 acres	0 acres	66 acres
* connectivity/modified even-aged	0 acres	9 acres	0 acres	9 acres
* modified even-aged	0 acres	306 acres	13 acres	162 acres
* mortality salvage	0 acres	225 acres	580 acres	529 acres
Slash Treatment				
* Excavator Pile	0 acres	500 acres	75 acres	200 acres
* Handpile	0 acres	93 acres	93 acres	285 acres
* Lop and Scatter	0 acres	500 acres	600 acres	600 acres
Planting	0 acres	567 acres	35 acres	206 acres
Action	**Alternative 1 No Action**	**Alternative 2 Dwarf Mistletoe Infestation**	**Alternative 3 Canopy Retention**	**Alternative 4 Landscape Treatment**

Road Projects:				
* Miles of roads improved	0 miles	3.5 miles	3.5 miles	3.5 miles
* Miles of roads renovated	0 miles	62.0 miles	62.0 miles	62.0 miles
Road closure:				
*Seasonal/Temporary	0 miles	22.0 miles	22.0 miles	22.0 miles
*Decommission	0 miles	2.2 miles	2.2 miles	2.2 miles
*Full Decommission	0 miles	3.4 miles	3.4 miles	3.4 miles
Fish/Aquatic Habitat				
*Number sites for instream log placement	0 sites	4 sites	4 sites	4 sites
*Number of culverts replaced	0 culverts	1 culvert	1 culvert	1 culvert
*Number of culverts removed	0 culverts	13 culverts	13 culverts	13 culverts
Fuels Hazard Reduction				
*Handpile/FMZ	0 acres	300 acres	300 acres	300 acres
*Slash Buster	0 acres	900 acres	900 acres	900 acres
*Underburn	0 acres	1300 acres	1300 acres	1300 acres
Construction of Fence	0 feet	700 feet	700 feet	700 feet

C. Alternatives Examined in Detail

1. ALTERNATIVE 1--No Action

Analysis of this alternative provides a baseline against which the effects of an action alternative can be compared. For this EA, the No Action Alternative is defined as not harvesting timber or completing the other projects as defined.

2. ALTERNATIVE 2 - Treatment of Dense Forest Stands and Dwarf Mistletoe Infestation of Douglas-fir

The intent of this alternative is to reduce stand densities and the impacts of Douglas-fir mistletoe in order to maximize the growth and vigor of forest stands consistent with the NFP and RMP objectives. This alternative includes the projects described below:

2.a) Timber Harvest (See Map 2 for project location)

The overall scope of this action alternative covers approximately 1864 acres of BLM managed lands designated Matrix. Matrix lands include Southern General Forest Management Areas, Northern General Forest Management Areas and Connectivity/Diversity Blocks. This action consists of seven silvicultural methods:

1. Density Management of 1053 acres where individual small trees are removed from dense stands in order to redistribute growth to vigorous dominant and co-dominant trees. Approximately 40 percent canopy closure would be retained.

2. Selection cutting of 63 acres that removes individual trees from all diameter classes. Stand densities would be reduced, freeing up site resources (water and nutrients) for the remaining trees. Approximately 40 percent canopy closure would be retained.

3. Structural retention regeneration harvest of 142 acres, retaining a minimum of 16-25 trees per acre greater than 20 inches dbh. All merchantable trees less than 20 inches dbh would be removed. The residual canopy closure would be approximately 25-40 percent. Planting of conifer seedlings would occur following harvest.

4. Shelterwood retention regeneration harvest of 66 acres, retaining a minimum of 12-25 trees per acre greater than 20 inches dbh. All merchantable trees less than 20 inches dbh would be removed. The residual canopy closure would be approximately 20-40 percent. Planting of conifer seedlings would occur following harvest.

5. Connectivity/modified even-aged regeneration harvest of 9 acres, retaining a minimum of 12-18 trees per acre greater than 20 inches dbh. All merchantable trees less than 20 inches dbh would be removed. The residual canopy closure would be approximately 20-30 percent. Planting of conifer seedlings would occur following harvest.
6. Modified even-aged regeneration harvest of 306 acres, retaining a minimum of 6-8 trees per acre greater than 20 inches dbh. All merchantable trees less than 20 inches dbh would be removed. Canopy closure would be approximately 10-15 percent. Planting of conifer seedlings

would occur following harvest.

7. Mortality salvage of 225 acres; individual and groups (2 acres and less in size) of trees in deteriorating stands would be removed. Trees removed would be of low vigor, insect infested or Douglas-fir trees with a mistletoe rating of 4, 5, or 6. Canopy closure following entry would be approximately 60-70%.

Common to all silvicultural methods, large sugar and ponderosa pine trees would be released from competition from surrounding shrubs and trees. The objective is to maintain the genetic and structural legacies of pine species by reducing their susceptibility to mountain pine beetle attack.

2.b) Roads

See Table II in Appendix D for specific treatments of individual roads and segments.

The following is a breakdown of different types of closures:

Seasonal/Temporary (guardrail or gate)	22.0 miles
Road Decommissioning	2.2 miles
Road Full Decommissioning	3.4 miles

2.c) Aquatic Habitat Restoration

Instream Projects

Large Wood Placement- Same as described in Purpose and Need Section.

Culvert Replacement- Same as described in Purpose and Need Section.

Road Related Projects

Road Improvement- This action would occur on approximately 3.5 miles of road.

Seasonal/Temporary (guardrail or gate) - This would close approximately 22 miles of road

Road Decommissioning - This action would occur on approximately 2.2 miles of road.

Road Full Decommissioning - This action would occur on approximately 3.4 miles of road.

2.d) Fuel Hazard Reduction

The first treatment method is to use a slash buster to treat understory vegetation such as brush and associated species. The primary objective is to reduce ladder fuels. There are two secondary benefits associated with this treatment. The first is to reduce moisture competition which should produce a healthier more vigorous stand of trees. The second benefit is to increase wildlife forage. (See wildlife writeup) The slash buster treatment would occur within the oak woodlands,

pine savannah, and wedgeleaf chaparral. The primary targets of treatment would be wedgeleaf ceanothus, manzanita and in some cases conifer understory vegetation. In some areas this would be followed by a low intensity under burn in one to four years. About 900 acres are included in this treatment proposal.

The second treatment method is to construct a fuel modification zone. This consists of manually slashing understory vegetation with chainsaws, hand piling and burning. This treatment would be used in strips adjacent to roads and in areas that are unsuitable for the slash buster to work. In some areas this would be followed by a low intensity under burn in one to four years. This would cover about 300 acres. This treatment would also be used in timbered stands that have a dense stagnant fire generated understory.

The third treatment would consist of under burning in stands where fuel profiles are low enough over the majority of the area to allow this treatment without some form of mechanical intervention. Some hand slashing of vegetation may occur in brush pockets prior to burning. In areas where the primary fuel bed is dead spring burns could occur. In areas where the majority of the fuels are live burning would likely occur in the fall. Historically these types of areas would normally burn in the late summer to fall. These stands have little or no fuels that are over three inches in diameter to provide high intensities or long residence times. Without the presence of these fuels little soil heating would be expected to occur. Under-burning would occur within the riparian Reserves on intermittent streams. Pine savannah, oak woodlands and closed canopy conifer stands would be treated under this proposal. About 1300 acres are proposed for this treatment.

2.e) Fence Construction Around Spring

Approximately 700 feet of fence would be constructed around the mouth of the spring and along 200 feet of stream channel in T36S, R3E, section 31. The fence would be offset approximately 100 feet from the stream channel or at a logical location. An old, existing fence may be utilized also. Cattle would maintain access to approximately 100 feet of stream.

3. ALTERNATIVE 3 - Canopy Retention

The intent of this alternative is to minimize the creation of forest openings in the transient snow zone (TSZ) while meeting other NFP and RMP objectives. This alternative would maintain 60-70 percent or greater canopy closure in all stands treated within the TSZ. This alternative includes the projects described below:

3.a) Timber Harvest (See Map 3 for project location)

The overall scope of this action alternative covers approximately 1642 acres of BLM managed lands designated Matrix. Matrix lands include Southern General Forest Management Areas, Northern General Forest Management Areas and Connectivity/Diversity Blocks. This action alternative consists of four silvicultural methods:

1. Density Management of 1025 acres where individual small trees are removed from dense

stands in order to redistribute growth to vigorous dominant and co-dominant trees. Approximately 60-70 percent canopy closure would be retained in stands within the TSZ. Stands treated outside of the TSZ would have approximately 40 percent canopy closure following treatment.

2. Structural retention regeneration harvest of 8 acres would occur outside of the TSZ, retaining a minimum of 16-25 trees per acre greater than 20 inches dbh. All vigorous and disease free Douglas-fir, incense cedar, ponderosa pine, sugar pine, and hardwoods less than 20 inches dbh would be left. These trees would provide for additional structural diversity and greater canopy closure. Canopy closure following entry would be approximately 25-40 percent. Planting of conifer seedlings would occur following harvest.

3. Mortality salvage of 580 acres; individual and groups (2 acres and less in size) of trees in deteriorating stands would be removed. Trees removed would be of low vigor, insect infested or Douglas-fir trees with a mistletoe rating of 4, 5, or 6. Canopy closure following entry would be approximately 60-70%.

4. Modified even-aged regeneration harvest of 13 acres outside the TSZ, retaining a minimum of 6-8 trees per acre greater than 20 inches dbh. All merchantable trees less than 20 inches dbh would be removed. Canopy closure would be approximately 10-15 percent. Planting of conifer seedlings would occur following harvest.

3.b) Roads

Same as alternative 2.

3.c) Aquatic Habitat Restoration

Instream Projects

Large Wood Placement- Same as alternative 2.

Culvert Replacement- Same as alternative 2.

Road Related Projects

Same as alternative 2.

3.d) Fuels Hazard Reduction

Same as Alternative 2.

3.e) Fence Construction Around Spring

Same as Alternative 2.

4. ALTERNATIVE 4 - Landscape Alternative

This alternative provides for greater landscape connectivity, higher canopy closure and more structural diversity in treated stands as compared to the minimum NFP and RMP management guidelines. This alternative includes the projects described below:

4.a) Timber Harvest (See Map 4 for project location)

The overall scope of this action alternative covers approximately 1901 acres of BLM managed lands designated Matrix. Matrix lands include Southern General Forest Management Areas, Northern General Forest Management Areas and Connectivity/Diversity Blocks. This action consists of seven silvicultural methods:

1. Density management of 1053 acres where individual small trees are removed from dense stands in order to redistribute growth to vigorous dominant and co-dominant trees. Approximately 60-70 percent canopy closure would be retained in stands within the TSZ. Stands treated outside of the TSZ would have approximately 40 percent canopy closure following treatment.

2. Selection cutting of 35 acres that removes individual trees from all diameter classes. Stand densities would be reduced, freeing up site resources (water and nutrients) for the remaining trees. Large, medium, and small trees would remain and provide for structural and biological diversity. At least 70 percent canopy closure would be retained.

3. Structural retention regeneration harvest of 47 acres, retaining a minimum of 16-25 trees per acre greater than 20 inches dbh. All vigorous and disease free Douglas-fir, incense cedar, ponderosa pine, sugar pine, and hardwoods less than 20 inches dbh would be left. Canopy closure following entry would be approximately 25-40 percent. Planting of conifer seedlings would occur following harvest.

4. Shelterwood retention regeneration harvest of 66 acres, retaining a minimum of 12-25 trees per acre greater than 20 inches dbh. All vigorous and disease free Douglas-fir, incense cedar, ponderosa pine, sugar pine, and hardwoods less than 20 inches dbh would be left. Canopy closure following entry would be approximately 20-30 percent. Planting of conifer seedlings would occur following harvest.

5. Connectivity/modified even-aged regeneration harvest of 9 acres, retaining a minimum of 12-18 trees per acre greater than 20 inches dbh. All merchantable trees less than 20 inches dbh would be removed. The residual canopy closure would be approximately 20-30 percent. Planting of conifer seedlings would occur following harvest.

6. Modified even-aged regeneration harvest of 162 acres, retaining a minimum of 6-8 trees per acre greater than 20 inches dbh. All vigorous and disease free Douglas-fir, incense cedar,

ponderosa pine, sugar pine, and hardwoods less than 20 inches dbh would be left. Canopy closure following entry would be approximately 10-15 percent. Planting of conifer seedlings would occur following harvest.

7. Mortality salvage of 529 acres; individual and groups (2 acres and less in size) of trees in deteriorating stands would be removed. Trees removed would be of low vigor, insect infested or Douglas-fir trees with a mistletoe rating of 4, 5, or 6. Canopy closure following entry would be approximately 60-70%.

4.b) Roads

Same as alternative 2.

4.c) Aquatic Habitat Restoration

Instream Projects

Large Wood Placement- Same as alternative 2.

Culvert Replacement- Same as alternative 2.

Road Related Projects

Same as alternative 2.

4.d) Fuels Hazard Reduction

Same as Alternative 2.

4.e) Fence Construction Around Spring

Same as Alternative 2.

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

1. 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. Rip skid roads in all tractor regen units in the same operating season.

2. 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. Rip identified access spur roads to a depth of 18" utilizing a subsoiler or winged-toothed ripper.

3. Lop and scatter, pile activity slash, or underburn activity slash as necessary to reduce or eliminate additional fuel loading. Burn piled slash during the fall and winter to reduce impacts on air quality. All burning would follow the guidelines of the Oregon Smoke Management Plan.

4. Restrict tractor yarding operations to slopes generally less than 35 percent. In areas where it is necessary to exceed 35 percent, utilize ridge tops where possible.

5. Waterbar all skid roads and firelines during the same operating season.

6. All road renovation, closure, and/or improvement work would be restricted from October 15 to May 15 or when soil moisture exceeds 25 percent.

7. Block or barricade identified roads after use and before beginning of rainy season (generally October 15).

8. Implement seasonal restriction of March 1 to September 30 for activities within ¼ mile of known spotted owl sites (within ½ mile for helicopter operations), unless birds are determined not to be nesting. Maintain a 100 acre core area for each owl site known prior to January 1, 1994.

9. Maintain all snags except those which need to be felled for safety reasons, or which are marked for harvest removal. Those snags that must be felled for safety, would be left on site.

10. No timber harvesting would occur within Riparian Reserves.

11. No new roads or skid roads would be constructed within the Riparian Reserve lands.

12. No new permanent roads would be constructed. All operational spurs would be fully decommissioned.

13. Roads within the Riparian Reserves identified for decommissioning or closure would be seeded in the same operational season they are to be decommissioned.

14. 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.

15. Protection buffer reserves would be established around Survey and Manage fungi and bryophyte species category 1 and 3, Protection Buffer species, and Special Status Vascular plant species to protect populations and maintain interior habitat conditions.

16. Fall burning could occur through sites where Special Status Vascular plants are discovered after July 15th.

17. Survey and Manage lichen species category 1 & 3 found in fuel treatment units would be protected by establishing 100 foot protection buffers or allowing prescribed underburning with minimum flame lengths and heat loads that ensure survival of host trees, crowns and minimize bole scorching.

18. For heavy equipment operations, ephemeral stream crossings would be minimized to prevent stream bank degradation. Slash buster operations would be parallel to ephemeral draws.

19. The chaparral vegetative community would be seeded with native grasses, as available.

20. Properly dispose of all oil, fuel, and filters.

21. Refueling of equipment would be outside of the Riparian Reserves.

22. All applicable State of Oregon Department of Environmental Quality guidelines for spill prevention and containment of petroleum products would be followed (Oregon Administrative Rules, Chapter 340, Division 108 - DEQ -Oil and Hazardous material spills and releases).

23. 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 Purchasers representatives responsible for supervising initial containment action for releases and subsequent cleanup.

24. 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.

25. In the Mortality Salvage Units within the TSZ, openings created by group selection would not exceed two acres.

26. No firelines would be built, or the use of fire retardant chemicals allowed within the Riparian Reserves, under fuels treatment projects as proposed.

27. 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.)

Ginger Springs Recharge Area

1. Chemical toilets would be required within the Ginger Springs Recharge Area.

2. No storage of fuel or oil products in quantities exceeding two hundred (200) gallons within the Ginger Springs Recharge Area.
3. Use approved absorbent materials under stationary equipment within the Ginger Springs Recharge Area.

Lick Creek Stream Restoration

1. Remove soil and rock from rootwads of trees which are to be used as key pieces by using a high pressure hose and hand tools.

2. Place all large wood in stream according to project design and minimize shifting or movement of large wood pieces.

3. All instream work will be completed between June 15 and September 15 of any given year or the specified time period identified by the Oregon Department of Fish and Wildlife.

4. Minimize or eliminate operation of equipment within the stream channel.

5. Install temporary sediment catchment at approximately 25 foot intervals for a minimum of 100 feet below the culvert replacement site.

6. Sediment collected in the catchment basins would be removed with hand tools and placed and stabilized in a manner that will not allow that material to re-enter the stream channel.

7. Sedimentation and erosion controls must be implemented on all project sites where the implementation of restoration activities will result in soil and/or slope disturbances. Soil and slope stabilization control structures must be bioengineered, a stabilization technique that incorporates plants and native materials, to the extent possible. Structures/techniques must be placed and/or anchored appropriately to prevent adverse impacts to down slope habitats. Revegetate disturbed areas with native vegetation as soon as possible. Control structures/techniques may include, but are not limited to, silt fences, hay bale structures, seeding by hand and hydroseeding, jutte mats, and coconut logs.

8. Remove large fills during low stream flow periods. Use silt dams and filters (such as straw bales) to filter sediment from the water. Earthwork should be completed in the dry season, typically mid-June through mid-October. Culvert work shall be isolated from stream flows by the installation of a bypass flume or culvert, or by pumping the stream flow around the work area. The bypass reach shall be limited to the minimum distance necessary to complete the project.

9. All fill material removed should be placed at stable locations in such a manner as to avoid sedimentation and aid in soil recovery. Sediment and erosion controls must be placed around all stockpiled material and disturbed project sites to prevent the introduction of pollutants into water sources.

10. Upon completion of construction activities, all exposed soils and waste areas should be stabilized with a mixture of seed and mulch.

11. Imported fill which will remain in the stream channel after culvert removal shall consist of clean, rounded gravels ranging in size from one-quarter to three inches in diameter.

Table 4. THE ALTERNATIVES AND THE ISSUES - SUMMARY OF THE CONSEQUENCES

Issues	Alternative 1 No Action	Alternative 2 Treatment of Dense Forest Stands and Dwarf Mistletoe Infection of Douglas-fir	Alternative 3 Canopy Retention	Alternative 4 Landscape
1) Dense forest stands and declining stand and tree vigor				
* Acres receiving treatment				
* density management,	0 acres	1053 acres	199 acres	423 acres
* density management, high canopy closure	0 acres		826 acres	630 acres
* selective cut,	0 acres	63 acres	0 acres	35 acres
* structural retention	0 acres	142 acres	8 acres	47 acres
* shelterwood retention	0 acres	66 acres		66 acres
* connectivity modified even-aged	0 acres	9 acres		9 acres
* modified even-aged	0 acres	306 acres	13 acres	162 acres
* mortality salvage	0 acres	225 acres	580 acres	529 acres
*** Change in density of trees per acre in:** - commercial thinning and selective cuts.	Relative Density 65 to >100%	Relative Density 35-40%	Relative Density 35-60%	Relative Density 36-60%
- regeneration harvests - trees per acre >20"dbh	17-40	6-25	6-25	6-25
*** Change in growth rate in:**				
- commercial thinning and selective cuts.	Minimum growth per tree, growth/acre offset by mortality.	Tree vigor and growth maximized	Tree vigor and growth increased.	Same as Alternative 3
- regeneration harvests	Minimum growth per tree, growth/acre offset by mortality. Continued spread of Mistletoe in stand and adjacent stands.	Growth potential re-directed to planted conifers.	Same as Alternative 2	Same as Alternative 2

Transient Snow Zone - within the 6th field watershed	No change	17% increase in openings in Little Butte North Fork Lower 9.5% increase in opening in Salt/Long Branch 5% increase in openings in Big Butte South Fork Lower 9.5% increase in openings in Ginger Spring Drainage	Direct and Indirect effects are expected to be negligible.	6% increase in openings in Little Butte North ForkLow. 3% increase in openings in Salt/Long Branch 3% increase in openings in Big Butte South Fork Lower 6% increase in openings in Ginger Spring Drainage
Fish / Aquatic Habitat *Anticipated degree of change in fine sediment levels over current conditions *Anticipated degree of change in aquatic habitat complexity within the proposed project reach. *Anticipated degree of change in freshwater survival rates of juvenile salmonids within the proposed project area. *Miles of improvement *Miles of renovation *Miles of seasonal/temporary closure *Miles of decommissioning. *Miles of full decommissioning.	No anticipated short term change, probable long term, moderate level of increase in baseline fine sediment levels. Maintain moderate to poor condition of aquatic habitat. Maintain depressed freshwater survival of rates. 0 miles 0 miles 0 miles 0 miles 0 miles	Negligable short term increase, long term prevention of increase. Improvement over current aquatic habitat condition. Improvement of current freshwater survival rates of juvenile salmonids 3.5 Miles 62 Miles 22 Miles 2.2 Miles 3.4 Miles	Negligible short term increase, long term prevention of increase. Improvement over current aquatic habitat condition. Improvement of current freshwater survival rates of juvenile salmonids 3.5 Miles 62 Miles 22 Miles 2.2 Miles 3.4 Miles	Negligable short term increase, long term prevention of increase. Improvement over current aquatic habitat condition. Improvement of current freshwater survival rates of juvenile salmonids 3.5 Miles 62 Miles 22 Miles 2.2 Miles 3.4 Miles
Fuels Hazard Reduction	Stand densities will remain unchanged, a moderate increase in ladder fuels.	Ladder fuels would be reduced. Reducing canopy closure to 40% will eliminate the potential for running crown fires.	Density management may remove some of the ladder fuels. 70% canopy will still maintain the potential for crown fires.	same as alternative 3

The numbers shown are estimates based upon field data, growth models, and existing resource knowledge and studies.

III. AFFECTED ENVIRONMENT

A. Introduction

This chapter describes the present condition of the environment within the proposed 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 (See appendices A, B and C).

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, 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 Little Butte Creek watershed, see the Little Butte Creek Watershed Analysis, completed in November 1997, for Ginger Springs see the Watershed Analysis and Management Plan for BLM Lands Within the Ginger Springs Recharge Area, completed in September 1998, and for Central Big Butte Creek watershed see the Central Big Butte Watershed Analysis, completed July 1995. These documents are available at the Butte Falls Resource Area, Medford District BLM Office.

1. Dense Forest Stands and Dwarf Mistletoe Infestation of Douglas-fir

Excess stocking of conifer trees has resulted in declining growth rates and decreased stand vigor. Individual tree vigor is declining as moisture, nutrients, and sunlight availability are becoming limited due to increased inter-tree competition. Moisture and nutrients are important factors that dictate the health and resiliency of a forest stand. Dense stands that exceed the"carrying capacity" of the site's resources are not ecologically sustainable.

In many stands, dwarf mistletoe infestation in Douglas-fir is causing a decline in the health and vigor of affected trees. Dwarf mistletoe is a parasitic plant that is dependent upon the host tree for nutrients and water. As the mistletoe grows and spreads within the tree crown, it commands a larger and larger share of nutrients and food produced by the tree. Ultimately, the infested tree can not meet its own needs and tree vigor declines. Heavily infested trees die prematurely, have

reduced growth in height and diameter, and are often predisposed to attack by disease and insects.

2. Cumulative Impacts - Soils and Watershed

Watershed

The TSZ is an elevation band (3500-4500 feet) where snow pack can accumulate and is at a high risk for a rain-on-snow occurrence. Typically, rain-on-snow events produce flood conditions which can severely alter stream channel morphology and degrade aquatic habitat.

Activities such as timber harvest and road and landing construction create openings in the tree canopy where snow can accumulate. This increases the magnitude of runoff in a potential rain-on snow event. Typically, a canopy cover of 60-70 percent or more is considered adequate to reduce this potential effect.

Through cumulative effects analysis of the Wasson Canyon watershed compartment, this project area has been determined that there is a substantial amount of non-recovered openings (less than 60-70 percent canopy cover) in the TSZ as a result of past timber harvest activities (particularly on privately owned timberlands). This creates a high level of risk for a rain-on-snow occurrence and the subsequent degradation it can cause.

The proposed project area encompasses two fifth field watersheds: Little Butte Creek (a key watershed) and Central Big Butte Creek. Cumulative effects analysis was considered for two sixth field watersheds within the Little Butte Creek watershed; Little Butte North Fork Lower (10,230 Acres) and Salt/Long Branch (14,253 Acres). Current condition for TSZ openings in the Little Butte North Fork Lower watershed is estimated to be at a moderate to high level. The current condition for the Salt/Long Branch watershed is estimated to be at a moderate level of openings.

One sixth field watershed was used as the cumulative effects analysis area within the Central Big Butte watershed; Big Butte South Fork Lower (16,180 acres). The current condition for this sixth field watershed is estimated to be moderate. Portions of the Butte Falls Geologic Municipal Watershed lie within this watershed. (See the Watershed Analysis and Management Plan for BLM Lands Within the Ginger Springs Recharge Area)

The determination of the amount of non-recovered openings in the TSZ is based on data from the Operations Inventory, Western Oregon Digital Data Base satellite imagery, and estimates from aerial photo interpretation. The estimation of the level of risk within the TSZ are based on temporal and spatial distribution of harvest regimes, topography, soil characteristics, stream channel and riparian inventories, and road densities.

Soils

The dominant soil types found on the plateaus and gently sloping landforms are the Geppert and Freezner soil series. These soils are medium textured with loam to clay loam subsoils. The Geppert soil contrasts the Freezner soil in being skeletal (greater than 35 percent rock fragments in the subsoil) and soil depth (20-40 inches) where the Freezner soil is 40-60 inches deep to weathered andesitic bedrock. The Farva soils are also abundant in the proposed project area and are similar to the Geppert soils except they are found at higher elevations (greater than 3500 feet). The common

risk factors to soil productivity and soil erosion on these soil types comes from high road densities (greater than 4 miles/section), soil compaction from landings and skid roads, and openings in the overstory canopy within the transient snow zone of forested areas. These factors also create risks to water quality parameters and aquatic habitat by increasing sedimentation and turbidity rates in local stream channels.

To a lesser extent in this project area are soils that are found on steep canyon sideslopes (35-70 percent). These are the McNull soil series and the McMullin soil series. These soils are similar except the McNull soil is moderately deep (20-40 inches) to weathered volcanic bedrock and the McMullin soil is shallow (less than 20 inches) to hard fractured volcanic bedrock. Due to high clay content and steep slopes the McNull soil is typically prone to slumping and sliding. In areas where regeneration harvest on steep sideslopes has occurred adjacent to stream channels, the risk of adverse effects to water quality and aquatic habitat is increased from slope failure.

3. Aquatic Habitat/Water Quality

The proposed projects are located in the Little Butte Creek and Big Butte Creek watersheds within the Rogue River System. A portion of the Little Butte Creek watershed above the confluence of the North and South Forks, has been identified as a Tier 1 Key Watershed. Key Watersheds contribute directly to conservation of at-risk anadromous salmonids, bull trout, and resident fish species. They also have a high potential of being restored as part of a watershed restoration program, and serve as anchors for the potential recovery of depressed stocks (USDI, June 1995, Medford ROD and RMP pg 22). Major fish bearing streams within the proposed project area are Little Butte Creek, North Fork Little Butte Creek, Lick Creek, Salt Creek, Wasson Creek, and Rock Creek. A variety of resident and anadromous fish species are found in Little Butte Creek. Anadromous fish species that utilize this stream and its tributaries are coho salmon, steelhead trout, chinook salmon, and possibly Pacific lamprey. Native resident fish species include cutthroat trout, rainbow trout, Klamath smallscale suckers, and sculpin species. Introduced non native fish species include smallmouth bass, redside shiners, catfish, and crappie. Coho salmon populations within the Little Butte Creek Watershed are depressed due to loss of habitat and poor water quality (Little Butte Creek WA, 1997).

Two special status fish species utilize the Little Butte Creek and Big Butte Creek watersheds for spawning and rearing: Southern Oregon/Northern California (SONC) coho salmon (*Oncorhynchus kisutch*), and Klamath Mountain Province (KMP) steelhead (*Oncorhynchus mykiss*). The National Marine Fisheries Service (NMFS) listed coho salmon in the Rogue River and Klamath Basins on May 6th, 1997 as “threatened” under the Endangered Species Act. Steelhead trout were proposed by NMFS as a sensitive “at risk” candidate in March 1998. NMFS proposed listing the chinook salmon as “threatened” under the Endangered Species Act on February 27th, 1998. A determination was made in March 1999 that the listing of chinook salmon runs in the Southern Oregon/Coastal California region was not warranted.

Comprehensive aquatic habitat inventories have been completed on Lick Creek, Salt Creek, Yew Creek, and Wasson Creek. Overall, aquatic habitat elements are in poor condition and are currently below the desired range of conditions, indicating habitat degradation. Major habitat features found to be impaired are spawning gravel quantity and quality, pool complexity and quantity, large wood

abundance, and riparian condition. Limiting factors within this watershed have been identified as low flows, high summer stream temperatures, habitat modification,
instream degradation, high amounts of sediment, and the presence of coliform bacteria..

4. Fuel Hazard Reduction

The project area is located in the foothills of the Cascade Mountains in the Little Butte Creek Drainage and characterized by shallow soils over thick andesite deposits with mostly southerly exposures. Intermittent streams dissect the topography and the summers are long, hot, and droughty. The vegetative community is influenced greatly by these features and shapes a mosaic of vegetative communities from rock outcrops and meadows to buckbrush chaparral and oak/ponderosa pine/madrone vegetative communities. On the shallow soils occur meadows comprised mostly of annual forbs and grasses with vernal seeps in the draws. As soils deepen, the chaparral community develops with buckbrush, deerbrush, and manzanita the dominate plant species. On deeper soils, annual forbs and the perennial grass community generally consist of idaho fescue, pine bluegrass, brome species with introduced non-native grasses such as medusa head and dogtail. As oaks, ponderosa pine, and madrone overstory canopy densify, a mixture that includes fewer grasses and more shade tolerant brush, hardwoods, and conifers species occur. Small patches of starthistle exist along roads at the lower elevations.

The riparian vegetative zone is characterized by very narrow strips along intermittent streams, vernal seeps, and seasonally wet areas that contain a seasonal succession of riparian forbs, sedges, and grasses. Most of the vegetation in the Riparian Reserve consists of the surrounding chaparral vegetative community except for the bottom and banks of the channel.

To adequately describe the project area it needs to be broken into two distinct zones. The first is all lands below 3500 feet. The second area to be described will be all lands above the 3500 foot level.

Lower Elevation Lands
These lands are currently in high to very high fire hazard condition. Large portions of these lands are old and dense brush fields. A portion of these lands is in the rural interface area; this location poses an increased risk of fire ignitions. The areas that are primarily wedgeleaf ceanothus meet the criteria for fuel model 4. These sites could be expected to burn with 19 ft. flame lengths under typical mid to late fire season conditions. Those sites that are composed of primarily manzanita meet the fuel model 6 criteria and would burn with 6 ft. flame lengths. Those areas containing conifers could be expected to burn somewhere between the two fuel models, depending on vegetation percentages. Slope will contribute to fire intensity - the greater the slope the more intense the expected fire behavior.

High elevation lands
These lands are currently in a moderate to high fire hazard condition. The moderate to high fire hazard conditions provide for potential crown fires to occur due to stand conditions, which provide for ladder fuels and canopy closure of 70 percent or greater. Those stands which have mistletoe infestation also contribute to the potential for crown fires by creating dense brooms, primarily in the crowns of the overstory. The mortality in the stand can also contribute to fire spread rates and add to control complexity. Slope can also contribute to fire intensity, although the majority of the

timbered stands are on flatter slopes, helping to reduce the potential for larger fires. The open timber stands within the project area would meet criteria fuel model 10. These sites would be

expected to burn with a 4-5 ft. flame length under typical mid to late fire season conditions. Closed canopy conifer stands with heavy mistletoe and continuous ladder fuels may burn as either fuel model 6 or 4, or somewhere in between. These sites could be expected to burn with 6-19 ft. flame lengths under typical mid to late fire season conditions.

The significance of these numbers is as follows:

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, crowning, and spotting.

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

Hazard Reduction Treatments

The proposal is to treat fuels on approximately 2500 acres exclusive of timber sale units. After treatment flame lengths on the majority of the area would be less than 4 feet.

Treatments would be broken out as follows:

Handpile/FMZ - 300 acres

Slash buster -900 acres

Underburn natural fuels - 1300

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)

1.1. Dense Forest Stands and Dwarf Mistletoe Infestation of Douglas-fir

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, resulting in a greater susceptibility to insects, disease, and severe fire behavior.

In the absence of disturbance events such as fire, density management, or regeneration harvests, the shift in species composition would continue toward more shade tolerant white fir. With high densities and closed canopies, white fir would eventually crowd out the more drought and fire resistant species, such as ponderosa pine, sugar pine, Douglas-fir, and incense cedar. With this species shift, tree species diversity would decline and an important natural defense against the effects of prolonged drought, potential climatic change, and fire would be lost.

Deteriorating stands would not be entered and would remain at high risk to insect attack, mistletoe infestation, and tree mortality.

Douglas-fir mistletoe would continue to cause a decline of infested trees. Horizontal and vertical spread of the parasitic plant would continue with the mistletoe rating (refer to Appendix H) expected to increase one class every 10-15 years. Dependent upon canopy structure, moisture availability, and current mistletoe levels, the rate of tree decline and mortality would vary. Trees with a current mistletoe rating of 6 would be expected to die within the next 5 years. Trees with a current mistletoe rating of 5 would be expected to die within the next 10 years. Infestation of understory Douglas-fir trees would continue with most of the infested trees less than 8 inches in diameter not expected to reach merchantable size prior to mortality.

Large sugar and ponderosa pine would not be released. Large pine species would die at an accelerated rate due to competition, moisture stress, and beetle infestation. The mortality of large pine species would result in the loss of a valuable genetic and structural legacy.

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 and the increase of Douglas-fir mistletoe, weakened trees may lose resistance to insects and disease. Declining individual tree growth would continue with tree mortality expected to increase. As a result, long term productivity of conifer trees would be expected to decline.

c) Irreversible/Irretrievable Commitments of Resources

No irreversible commitments of resources are anticipated. The loss of conifer growth potential, due to high stand densities and mistletoe induced stress, would be an irretrievable loss.

d) Cumulative Effects

An increase in insects, diseases, and higher fire risk due to high stand densities would be expected.

Douglas-fir mortality rates would increase due to the impacts of dwarf mistletoe. Shade tolerant conifer species, particularly white fir, would be the predominant regenerating species.

1.2. Cumulative Impacts - Watershed/Soils

a) Direct and Indirect Effects

Indirectly, some roads identified for decommissioning and/or improvement that are actively eroding, would continue to contribute sediments to nearby streams.

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

None anticipated

c) Irreversible/Irretrievable Commitments of Resources

None anticipated

d) Cumulative Effects

There would be no change in the existing condition.

1.3. Aquatic Habitat/Water Quality

a) Direct and Indirect Effects

Indirectly, the vegetation within the Riparian Reserve 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.

This alternative would maintain current degraded aquatic habitat conditions and fish passage barriers. Maintaining this current situation would be expected to indirectly result in the continued negative effects of reduced freshwater survival of salmonids and delayed or obstructed fish migration.

Additionally, this alternative could indirectly contribute to stream sedimentation by delaying or foregoing routine road maintenance and renovation of the road system. This would be expected to have a negative effect on fisheries and aquatic resources through contributing to habitat degradation over the long-term.

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

No measurable change to the current trend in long-term productivity (50-100+ years) of fisheries and aquatic resources is anticipated by maintaining the current Riparian Reserve vegetation

condition in the proposed project area. This alternative would continue to provide the long-term necessary elements for healthy riparian and aquatic ecosystems and would be anticipated to maintain or increase the current productivity of fisheries and aquatic resources over the long-term.

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 long-term (>5 years). Current levels of stream sedimentation would be maintained or could increase. This would be expected to negatively affect aquatic habitat and, subsequently, the productivity of fisheries and aquatic resources in the watershed over the long-term.

Foregoing large wood placement would be expected to maintain negative aquatic habitat conditions in the proposed project area over the short-term (<50 years). This would be expected to maintain current levels of fish production over the short-term until adequate recruitment of large wood is achieved from recovered riparian areas over the long-term (50-100+ years).

Foregoing culvert replacement/removal would be expected to maintain negative fish passage and aquatic habitat connectivity conditions, limiting access to additional aquatic habitat in the proposed project area until the next replacement rotation (~30 years). This would be expected to maintain current levels of fish production over the short-term (<50 years).

Foregoing the fuels reduction actions in the project area will continue to maintain the current fuels densities created by years of fire suppression in these watersheds. Current levels of forest nutrient cycling and riparian vegetation condition would be maintained. This would be expected to maintain current levels of fish production over the long-term.

c) Irreversible or Irretrievable Commitments of Resources

None anticipated.

d) Cumulative Effects

A positive cumulative effect 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. However, the early and mid-successional condition within portions of the Riparian Reserve would be maintained in the short-term and delay the time frame for these stands to make a long-term positive contribution of large wood to the aquatic ecosystem.

Due to the lack of road maintenance or renovation, current levels of stream sedimentation could be increased. Some roads may stabilize over time as they revegetate naturally; however, this may take many decades to achieve. The cumulative effect of roads is also dependent upon private landowners' activities and their use and maintenance of the transportation system in the watershed. The lack of preventive road maintenance and renovation would be expected to have a negative cumulative effect on fisheries and aquatic resources.

Foregoing the large wood placement would continue to maintain current aquatic habitat conditions

in this stream system. This would be expected to result in a continued lack of instream structure, habitat diversity, and protective cover needed by fish, creating a negative cumulative effect upon fisheries and aquatic resources.

Foregoing the culvert replacement/removal would continue to maintain current aquatic habitat conditions. This would be expected to maintain the current negative cumulative effect of degraded aquatic habitat and limited access to additional habitat.

Foregoing the fuels treatments would continue to maintain current riparian vegetation conditions. This would maintain the current rate of recruitment of large wood due to stand density conditions and slower nutrient cycling. This would be expected to delay the time frame for these stands to make a long-term positive contribution of large wood to the aquatic ecosystem, resulting in a continued lack of instream structure, habitat diversity, and protective cover needed by fish and creating a negative cumulative effect upon fisheries and aquatic resources.

e) Determination of Effects on Southern Oregon/Northern California (SONC) Coho Salmon, SONC Critical Habitat, and Klamath Mountains Province (KMP) Steelhead Trout from Implementation of the Proposed Alternative.

May Affect, Likely to Adversely Affect

Due to the current degraded condition of aquatic habitat within the Little Butte Creek and Big Butte Creek watersheds, it would be expected that further degradation would occur from potential sediment delivery to streams from the existing road system. The No Action Alternative is likely to result in more than a negligible chance of "take[1]" of these species. As a result, the No Action Alternative is considered "likely to adversely affect" SONC coho salmon (listed "threatened"),SONC critical habitat and KMP steelhead trout (proposed "threatened"). Formal consultation with the National Marine Fisheries Service (NMFS) was initiated in April 2000 for SONC coho salmon,SONC critical habitat, and KMP steelhead.

1.4. Fuels Hazard Reduction

a) Direct and Indirect Effects

Because stand densities will remain unchanged the trend to shade tolerant species will continue which will create a moderate increase in ladder fuels. As the mistletoe increases in stands an increase in both ground and ladder fuels is expected. Aerial fuels will also continue to increase. As mortality continues in these stands snag populations and associated hazards will continue to accumulate. Until a disturbance, such as fire, enters the stand this trend is unlikely to change.

Existing high or very high fuel hazard conditions would continue in the oak, ponderosa, buckbrush chaparral vegetative communities. The risk of high fire intensities would continue, and wildfire control would be more difficult.

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

In the short term fuel loads and associated fire hazard increases are expected. As a result, the potential for large destructive fire will increase until some action occurs to change the stand dynamics. When a stand replacement fire does occur it may have a high potential for large impacts on long term site productivity.

Encroachment of more shade tolerant brush, hardwood, and conifer species would occur in the oak woodlands. Potentially there may be a loss of long-term site productivity in the event of a catastrophic fire event.

c) Irreversible/ Irretrievable Commitments Resources

None anticipated

d) Cumulative Effects

Based on cumulative effects to all vegetative communities, the long prognosis is for an increasing potential for large, destructive fires. These fires will have long term effects on both terrestrial and aquatic eco-systems.

C. Effects of Implementing Action Alternative 2 - Treatment of Dense Forest Stands and Dwarf Mistletoe Infestation of Douglas-fir

2.1. Dense Forest Stands and Dwarf Mistletoe Infestation of Douglas-fir

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. Maintaining larger trees with fuller crowns would provide sufficient tree canopies to reduce vegetative competition from brush and hardwoods. The larger trees and resulting canopies would also provide cover for a variety of wildlife species. Stand vigor and growth would be maximized 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 stand vigor and growth maximized. Stand structure would be multi-layered and multi-aged. Canopy closure in density management and selective cut stands would be decreased from 80-100 percent to approximately 40 percent.

In stands identified for regeneration harvests, variable levels of vigorous green trees greater than 20 inches dbh 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 toward shade intolerant species, reversing the current trend towards shade tolerant species. The impacts of Douglas-fir mistletoe within the treated stands would be controlled, allowing for establishment of non-host species and disease free Douglas-fir. Conifer growth and productivity would increase.

Large sugar and ponderosa pine would be released, resulting in a decreased rate of mortality and the conservation of a declining genetic and structural legacy.

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

In the short-term, the vigor of thinned and selectively cut stands would be increased. Long-term productivity would be expected to increase due to increased stand vigor and species diversity being maintained or increased. An increase in growth would be expected once the root systems of the residual trees expand and are able to utilize the additional moisture and nutrients.

In the regeneration harvests, overstory trees would provide for structural and biological legacies. 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/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 regeneration harvest for a period of approximately 80 years.

d) Cumulative Effects

Treatment under this alternative would result in stands which are more vigorous, healthy, and resilient to environmental changes. Stand growth and vigor would be maximized. Stand susceptibility to insect attack, disease infection, and fire would be expected to be reduced. Species composition would shift towards drought and fire tolerant species.

2.2. Cumulative Impacts-Watershed/Soils

a) Direct and Indirect Effects (Sixth field scale)

<u>Little Butte Creek Watershed</u>

Little Butte North Fork Lower- There would be an increase of approximately 612 acres of non-recovered openings within the TSZ from this proposed alternative. This equates to a 17% increase in openings. Although quantification of these effects on stream channels is unknown, it is expected that this would possibly contribute to the risk for degradation of local stream channels in this drainage from flooding if a rain-on-snow event were to occur. (See discussions on TSZ issues for effects of flooding on channel morphology and aquatic habitat). It is also not expected to meet identified ACS Objectives 3, 4, 5, and 6 or Little Butte Creek Watershed Analysis objectives in this sixth field watershed.

Salt/Long Branch- There would be an increase of approximately 381 acres of non-recovered openings within the TSZ from this proposed alternative. This equates to a 9.5% increase in openings. Although quantification of these effects on stream channels is unknown, it is expected

that this would possibly contribute to the risk for degradation of local stream channels if a rain-on-snow event were to occur.(See discussions on TSZ issues for effects of flooding on channel morphology and aquatic habitat.) It is also not expected to meet identified ACS Objectives 3, 4, 5, and 6 or Little Butte Creek Watershed Analysis objectives in this sixth field watershed.

Central Big Butte Watershed

Big Butte South Fork Lower-There would be an increase of approximately 160 acres of non-recovered openings within the TSZ from this proposed alternative. This equates to a 5% increase in openings. Although quantification of these effects on stream channels is unknown, it is expected that this would possibly contribute slightly to the risk for degradation of local stream channels if a rain-on-snow event were to occur. (See discussions on TSZ issues for effects of flooding on channel morphology and aquatic habitat). This is not expected to preclude ACS objectives.

All of the proposed harvest units in the Big Butte South Fork Lower watershed fall within the Butte Falls Geologic Municipal Watershed which includes the Ginger Springs drainage. The Ginger Springs drainage would have a 9.5% increase of non-recovered openings in the TSZ from this alternative. Although quantification of effects on stream flows is not known, this increase is expected to contribute moderately to risk levels to local streams (Ginger and Doubleday Creeks), if a rain-on-snow event were to occur.

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

The long term productivity (greater than 10 years) of local stream channels in terms of aquatic habitat and hydrologic stability could be adversely impacted if severe flooding were to occur. The increase of openings in the TSZ for this proposed alternative could contribute to the magnitude of a flood event. Quantification of these effects on stream channels and flow are not known, although the risk level for long-term productivity impacts are expected to be low.

c) Irreversible/Irretrievable Commitments of Resources

None anticipated

d) Cumulative Effects (Fifth field scale)

Little Butte Creek Watershed(238,598 acres)- It is anticipated that increases in the openings of the TSZ from this proposed alternative would add only a slight increment of risk to this scale of watershed effects. Again, quantification of this effect on stream flows is unknown. Current condition for this watershed in terms of TSZ openings is considered to be at a low-moderate level.

Central Big Butte Watershed (58,054 acres)- It is anticipated that increases in the openings of the TSZ from this proposed alternative would add only a small increment of risk to this scale of watershed effects. Again, quantification of this effect on stream flows is unknown. Current condition for this watershed in terms of TSZ openings is estimated to be at a moderate level.

2.3. Aquatic Habitat/Water Quality

a) Direct and Indirect Effects

This alternative would be expected to increase the risk for higher magnitude and frequency of peak flows in local stream channels through decreased canopy cover on 1024 acres in the TSZ. These high flows can alter stream morphology and degrade aquatic habitat. The proposed regeneration harvest treatments could indirectly alter the natural hydrologic flow paths and possibly increase the risk of erosion and subsequent stream sedimentation. However, due to the distance of the timber harvest units from designated critical habitat of listed fish species, and by restricting harvest to areas outside of Riparian Reserves, the effects to listed fish species are expected to be negligible.

No direct impacts are expected to occur to fish and aquatic habitat from stands identified for thinning and mortality harvest. These treatments would maintain characteristics of a mature stand and would provide sufficient tree canopies to provide the long-term habitat elements necessary for healthy aquatic ecosystems. Indirectly, fish and aquatic resources could be negatively affected from low level, localized increases to baseline stream turbidity and sediment levels in the short-term (<1 year). However, due to the distance of the timber harvest units from designated critical habitat of listed fish species, and by restricting harvest to areas outside of Riparian Reserves, the effects to listed fish species are expected to be negligible.

The proposed large wood placement could have direct negative effects from the operation of heavy equipment within the riparian reserve and in the stream channel. Disturbance of riparian vegetation will occur at a limited number of access points; however this will be kept to a minimum because no roads will need to be built to access the sites. It is possible that two or three trees less than 6" dbh may be pushed over as well as some shrubs may be crushed, but these will be left on site. Very little soil disturbance should occur from the “walking” of heavy equipment over the ground surface. Indirectly, fish and aquatic resources could be negatively affected from low level, localized increases to baseline stream turbidity and sediment levels in the short-term (<1 year). Conversely, implementation of the proposed action would be expected to improve aquatic habitat quality and diversity. This could directly benefit fishery resources by improving freshwater survival and increasing potential fish production within the watershed.

The proposed fuels treatments would be expected to restore fuel loads and forest nutrient cycling to more closely resemble historical levels. Fuel treatments will not be implemented in Riparian Reserves on perennial streams; however, fire may be allowed to enter riparian areas on some intermittent streams where the riparian vegetation consists of fire-adapted species. This would be expected to indirectly benefit fish and aquatic resources within the watershed by accelerating development of a late-successional forest capable of delivering large wood to the aquatic ecosystem. No mechanical fuel treatments will occur in the Riparian Reserves. Indirectly, fish and aquatic resources could be negatively affected from low level, localized increases to baseline stream turbidity and sediment levels in the short-term (<1 year). However, by following the appropriate PDF’s these effects will be minimized.

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

This alternative is not expected to impact the current trend in long term productivity (50-100+years) of fish and aquatic resources within the regeneration harvest treatment units. Reducing the canopy on 1024 acres within the TSZ could increase the risk for higher magnitude and frequency of peak flows in local stream channels. However, implementation of the appropriate PDF's would minimize these effects. Due to the distance of the timber harvest units from designated critical habitat of listed fish species, and by restricting harvest to areas outside of Riparian Reserves, the effects to listed fish species are expected to be negligible.

Thinning and selective cut treatments described in this alternative would not affect the long term-productivity of fish and aquatic habitat. 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 and would be anticipated to maintain or increase the current productivity of fisheries and aquatic resources over the long-term. Overall, implementation of these proposed actions would be expected to maintain or increase the productivity of fisheries and aquatic resources over the long-term, by accelerating development of a late-successional forest capable of delivering large wood to the aquatic ecosystem.

Short-term (<1 year) increases to baseline stream sediment levels are anticipated to occur from road maintenance, renovation, and decommissioning under the proposed timber sale. However, by following the appropriate PDF's these effects will be minimized. It is anticipated that an overall reduction in the risk to baseline stream sediment level increases 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.

Implementation of the proposed culvert replacement/removals could result in low level, localized increases to baseline stream turbidity and sediment levels in the short-term (<1 year). Overall, implementation of the proposed actions would be expected to maintain or increase the productivity of fisheries and aquatic resources over the long-term by improving access to upstream habitat.

Implementation of the proposed large wood placement project could result in low level, localized increases to baseline stream turbidity and sediment levels in the short-term (<1 year).

The proposed fuels treatments would be expected to restore fuel loads and forest nutrient cycling to more closely resemble historical levels. This would be expected to benefit fish and aquatic resources within the watershed over the long term by accelerating development of a late-successional forest capable of delivering large wood to the aquatic ecosystem. Fish and aquatic resources could be negatively affected from low level, localized increases to baseline stream turbidity and sediment levels in the short-term (<1 year). However, by following the appropriate PDF's these effects will be minimized.

Overall, implementation of the proposed actions would be expected to maintain or increase the productivity of fisheries and aquatic resources over the long-term by improving aquatic habitat conditions, thereby improving freshwater survival of salmonid species.

Implementation of the appropriate PDF's is expected to minimize short-term increases to baseline

stream sediment levels to negligible amounts.

c) Irreversible or Irretrievable Commitments of Resources

None anticipated.

d) Cumulative Effects

Cumulative effects from the regeneration harvest are expected to occur by increasing the risk of peak flow events within the stream channel. This may result in a low level short term increase of sediment delivery to the streams within the proposed units. However, implementation of the appropriate PDFs will minimize these effects. Due to the distance of the timber harvest units from designated critical habitat of listed fish species, and by restricting harvest to areas outside of Riparian Reserves, the effects to listed fish species are expected to be negligible

No negative cumulative effects to fish and aquatic resources are expected to occur from all other timber harvest prescriptions within the timber sale. This alternative would allow the vegetation within the Riparian Reserve to continue to develop at a natural rate. This is anticipated to result in a positive cumulative effect to fish and aquatic resources due to increased sizes and amounts of large wood which are being contributed to the aquatic ecosystem.

The proposed road-related projects could have a negative effect on fisheries and aquatic resources in the short-term by adding to current high levels of stream sediment from road maintenance, renovation, and decommissioning. However, by following the appropriate PDF's these effects will be minimized. A long-term, positive, cumulative effect to fish and aquatic resources is anticipated from reducing potential road-generated fine sediment by completing road maintenance, renovation, and decommissioning.

Implementation of the proposed culvert replacement could have a negative effect on fisheries and aquatic resources in the short-term by adding to current high levels of stream sediment. Overall, implementation of the proposed actions would be expected to improve current conditions by reducing the number of fish passage barriers and restoring natural hydrologic flows within the watershed.

Implementation of the proposed large wood placement project could have a negative effect on fisheries and aquatic resources in the short-term by adding to current high levels of stream sediment. Overall, implementation of the proposed actions would be expected to have a positive cumulative effect to fisheries and aquatic resources by improving aquatic habitat conditions, thereby improving freshwater survival of salmonid species.

No negative cumulative effects to fish and aquatic resources are expected to occur from the proposed fuels treatments. This alternative would allow the vegetation within the Riparian Reserve to continue to develop at a natural rate. This is anticipated to result in a positive cumulative effect to fish and aquatic resources due to increased sizes and amounts of large wood which are being contributed to the aquatic ecosystem.

Implementation of the appropriate PDF's is expected to reduce the anticipated negative,

cumulative effects of the proposed actions to negligible levels.

e) Determination of Effects on Southern Oregon/Northern California (SONC) Coho Salmon, SONC Critical Habitat, and Klamath Mountains Province (KMP) Steelhead Trout from Implementation of the Proposed Alternative - All Proposed Projects

May Affect, Likely to Adversely Affect

It would be expected that some degradation of aquatic habitat would occur due to potential increased peak flows resulting from reduced canopy in the TSZ. Degradation could also occur due to potential short term sediment delivery to streams resulting from the planned timber harvest, fuels treatment, road renovation and decommissioning . However, baseline sediment levels should be reduced in the long term as a result of these actions. Fish and aquatic resources could potentially be harmed from use of heavy equipment in the stream channel during culvert replacement. It would be expected that Alternative 2 is likely to result in more than a negligible chance of "take" of these species. As a result, Alternative 2 is considered "likely to adversely affect" SONC coho salmon (listed "threatened"), SONC critical habitat, and KMP steelhead trout (proposed "threatened"). Formal consultation with the National Marine Fisheries Service (NMFS) was initiated in April 2000 for SONC coho salmon, SONC critical habitat, and KMP steelhead trout.

2.4. Fuels Hazard Reduction

a) Direct and Indirect Effects

In stands identified for thinning, removal of smaller trees will reduce ladder fuels. In selectively cut stands ladder fuels would be reduced. Reducing canopy cover to 40 percent will eliminate the potential for running crown fires. The ladder fuel induced crown fire potential would also be reduced. In stands identified for regeneration harvest the reduction of mistletoe brooms and heavy ground fuels, as well as a species shift to more fire tolerant species, would have a large impact on fire hazard reduction.

Treatments within the oak, ponderosa, buckbrush chaparral vegetative communities would reduce the existing high or very high fuel hazard conditions. The risk of high fire intensities would be reduced if a wildfire would occur. Although, wildfire spread rates would remain high, fires would be easier to control.

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

In the short term fire hazard would be reduced. To maintain this reduction, fuels treatments would need to be maintained.

Losses of the oak woodland vegetative community from encroachment of more shade tolerant species would be reduced. The potential for large scale fires over the project area would be lessened, resulting in a reduced risk of long term productivity loss.

c) Irreversible/ Irretrievable Commitments Resources

None anticipated

d) Cumulative Impacts

Treatments under this alternative would reduce the fire hazard within the watershed and increase the health and vigor of the vegetative communities. Fires that did occur would have less impact due to lower fuel loadings.

D. Effects From Implementing Action Alternative 3 - Canopy Retention

3.1. Dense Forest Stands and Dwarf Mistletoe Infestation of Douglas-fir

a) Direct and Indirect Effects

Density Management would maintain densities above the upper limit of the carrying capacity of the stands treated in the TSZ. Stand vigor and individual tree growth would be slightly enhanced although not maximized. Stands would remain overstocked and susceptibility to insects, disease, and wildfire would be expected to remain high. The majority of the trees removed would be those most at risk of competition mortality, insect attack, or disease infection. Canopy closure would be decreased from 90-100 percent to approximately 60-70 percent. Stands outside of the TSZ would have the same direct and indirect effects as described under Alternative 2.

Mortality salvage would allow for the removal of some of the poorest vigor trees within deteriorating stands. Imminent mortality, insect attacked, or heavily mistletoe infested trees would be selected individually and in groups for removal. Canopy closure would be decreased from 80-100 percent to approximately 70 percent. Overall stand conditions would not change. Stand vigor and growth would remain low. Susceptibility to insect attack or disease mortality would be slightly reduced.

In stands outside of the TSZ identified for regeneration harvests, variable levels of vigorous green trees greater than 20 inches dbh would be left. Canopy closure would be reduced to 10-40%, depending on the level of green tree retention. Herbaceous, shrub, and tree species composition would be shifted toward shade intolerant species, reversing the current trend towards shade tolerant species. The impacts of Douglas-fir mistletoe within the treated stands would be controlled, allowing for the establishment of non-host species and disease free Douglas-fir. Conifer growth and productivity would increase.

Deteriorating stands that are not entered would remain at high risk to insect attacks, disease infection, and tree mortality. Individual tree mortality of heavily infested Douglas-fir trees is expected to be high within the next 5-10 years.

Large sugar and ponderosa pine would be released, resulting in a decreased rate of mortality and the conservation of a declining genetic and structural legacy.

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

In the short-term, the vigor of density management stands within the TSZ would be slightly increased. Little effect upon growth and long term conifer productivity would occur as densities would remain high. The effects upon stands treated outside of the TSZ would be the same as described under Alternative 2.

Mortality salvage would remove the lowest vigor trees most likely to die due to insects, disease (root pathogens), mistletoe, or poor crown condition. Long term site productivity for conifer growth would remain low. Species composition and diversity would shift from mixed conifers and hardwoods towards stands dominated by white fir. Varying levels of Douglas-fir mistletoe infestation would remain in many of the stands. Horizontal and vertical spread of mistletoe would continue. Growth losses and increased susceptibility to insects would be expected once the mistletoe rating exceeds 3.

In stands identified for regeneration harvests, variable levels of vigorous green trees greater than 20 inches dbh 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 toward shade intolerant species, reversing the current trend towards shade tolerant species. The impacts of Douglas-fir mistletoe within the treated stands would be controlled allowing for the establishment of non-host species and also disease free Douglas-fir. Conifer growth and productivity would increase.

c) Irreversible/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 high canopy closure in stands designated for regeneration harvest for a period of approximately 80 years.

d) Cumulative Effects

Treatment under this alternative would result in stands within the transient snow zone which are slightly more vigorous, healthy and resilient to environmental changes than present conditions. Stands entered for mortality salvage would have a negligible impact on individual tree and stand vigor; stand susceptibility to insect attack, disease infection, and fire would be expected to remain high. Regenerated stands and density management stands outside of the TSZ would be less susceptible to insect attack and disease infection.

3.2. Cumulative Impacts Watershed/Soils

a) Direct and Indirect Effects

The intent of this proposed alternative is to maintain at least 60-70% canopy cover on all harvest units where it currently exists. Although some smaller openings may occur during harvest, direct and indirect effects on the TSZ for all watersheds is expected to be negligible.

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

None anticipated

c) Irreversible/Irretrievable Commitments of Resources

None anticipated

d) Cumulative Effects

Maintaining 60-70% canopy cover in all harvest units within the TSZ would allow more time for other cut over areas to revegetate and help reduce the overall risk of high amounts of TSZ openings providing other future management activities in the area do not create more openings.

3.3. Aquatic Habitat/Water Quality

a) Direct and Indirect Effects

Because the TSZ canopy would be approximately 60-70%, no direct or indirect effects to the long-term productivity of fish and aquatic habitat would be expected from all prescriptions within the proposed timber harvest units. The effects of road, fuel treatment, culvert replacement, and habitat restoration actions would be the same as for Alternative 2.

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

No effects to the long-term productivity of fish and aquatic habitat would be expected from all prescriptions within the proposed timber harvest. The effects of road, fuel treatment, culvert replacement, and habitat restoration actions would be the same as for Alternative 2.

c) Irreversible or Irretrievable Commitments of Resources

None anticipated

d) Cumulative Effects

Because the TSZ canopy would be maintained at 60-70%, no cumulative effects to fish and aquatic resources are expected from all prescriptions within the proposed timber harvest. The effects of road, fuel treatment, culvert replacement, and habitat restoration actions would be the same as for Alternative 2.

e) Determination of Effects on Southern Oregon/Northern California (SONC) Coho Salmon, SONC Critical Habitat, and Klamath Mountains Province (KMP) Steelhead Trout from Implementation of the Proposed Alternative - Lick Creek Culvert Replacement.

May Affect, Likely to Adversely Affect

Fish and aquatic resources could potentially be harmed from use of heavy equipment in the stream channel during culvert replacement. Because the culvert replacement will occur on a stream containing listed fish species, it would be expected that this action is likely to result in more than a negligible chance of "take[1]" of these species. As a result, the Lick Creek culvert replacement is considered "likely to adversely affect" SONC coho salmon (listed "threatened"), SONC critical habitat, and KMP steelhead trout (proposed "threatened"). Formal consultation with the National Marine Fisheries Service (NMFS) was initiated in April 2000 for SONC coho salmon, SONC critical habitat, and KMP steelhead trout.

e) Determination of Effects on Southern Oregon/Northern California (SONC) Coho Salmon, SONC Critical Habitat, and Klamath Mountains Province (KMP) Steelhead Trout from Implementation of the Proposed Alternative - All Other Proposed Actions ***May Affect, Not Likely to Adversely Affect***

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, fuels treatments, road renovation and decommissioning. However, by following the appropriate PDFs these effects will be minimized and are not expected to result in "take" of listed fish species. Baseline sediment levels should be reduced in the long-term as a result of these actions. As a result, Alternative 3 is considered "not likely to adversely affect" SONC coho salmon (listed "threatened"), SONC critical habitat, and KMP steelhead trout (proposed "threatened"). Formal consultation with the National Marine Fisheries Service (NMFS) was initiated in April 2000 for SONC coho salmon, SONC critical habitat, and KMP steelhead trout.

3.4. Fuels Hazard Reduction

a) Direct and Indirect Effects

Density management may remove some of the ladder fuels. Maintaining 70% canopy will still maintain the potential for crown fires. There is potential for small scale short term reduction in fire hazard for the mortality salvage operation.

Same as alternative 2 within the oak, ponderosa, buckbrush, chaparral communities.

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

Overall there would be some minor reduction in fire hazard within the stands. This would be a short term reduction as no long term solutions to forest health are being proposed.

Same as alternative 2 within the oak, ponderosa, buckbrush, chaparral communities.

c) Irreversible/ Irretrievable Commitments Resources

None anticipated

d) Cumulative Impacts

Stands in the transient snow zone would see little reduction in fire hazard. Regeneration units would receive some benefit in fire hazard reduction.

Treatments under this alternative would reduce the fire hazard within the watershed and increase the health and vigor of the vegetative communities. Fires that did occur would have less impact due to lower fuel loadings.

E. Effects of Implementing Action Alternative 4 - Landscape Treatment

4.1. Dense Forest Stands and Dwarf Mistletoe Infestation of Douglas-fir

a) Direct and Indirect Effects

Density management and selective cutting would maintain densities above the upper limit of the carrying capacity of the stands treated in the transient snow zone. Stand vigor and individual tree growth would be slightly enhanced although not maximized. Stands would remain overstocked and susceptibility to insects, disease, and wildfire would be expected to remain high. The majority of the trees removed would be those most at risk of competition mortality, insect attack, or disease infection. Canopy closure would be decreased from 90-100 percent to approximately 60-70 percent, with multiple canopy layers present in the selectively cut stand. Stands outside of TSZ would have the same direct and indirect effects as described under Alternative 2.

Mortality salvage would allow for the removal of some of the poorest vigor trees within deteriorating stands. Imminent mortality, insect attacked, or heavily mistletoe infested trees would be selected individually and in groups for removal. Canopy closure would be decreased from 80-100 percent to approximately 60-70 percent. Overall stand conditions would not change. Stand vigor and growth would remain low. Susceptibility to insect attack or disease mortality would be slightly reduced.

In stands identified for regeneration harvests, variable levels of vigorous green trees greater than 20 inches dbh would be left. Canopy closure would be reduced to 10-40 percent, depending on the level of green tree retention. Structural diversity would be reduced and canopy layers would be limited to the residual overstory trees, and trees less than 8 inches dbh. Herbaceous, shrub, and tree species composition would be shifted toward shade intolerant species, reversing the current trend towards shade tolerant species.

Large sugar and ponderosa pine would be released, resulting in a decreased rate of mortality and the conservation of a declining genetic and structural legacy.

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

In the short-term, the vigor of density management and selectively cut stands within the TSZ would be slightly increased. Little effect upon growth and long term conifer productivity would occur as stand densities would remain high. The effects upon stands treated outside of the TSZ would be the same as described under Alternative 2.

Mortality salvage would remove the lowest vigor trees most likely to die due to insects, disease (root pathogens), mistletoe, or poor crown condition. Long term site and stand productivity for conifer growth would remain low. Species composition and diversity would shift from mixed conifers and hardwoods towards stands dominated by white fir. Varying levels of Douglas-fir mistletoe infestation would remain in many of the stands. Horizontal and vertical spread of mistletoe would continue. Growth losses and increased susceptibility to insects would be expected once the mistletoe rating exceeds 3.

In regeneration harvests, overstory trees would provide for structural and biological legacies. Planted conifer species and density levels would trend towards the plant communities and stocking levels that historically would have been present. These stands would begin to redevelop late successional characteristics after approximately 80 years.

c) Irreversible/Irretrievable Commitments of Resources

Same as alternative 2.

d) Cumulative Effects

Treatment under this alternative would result in stands within the transient snow zone which are slightly more vigorous than current conditions. Stands entered for mortality salvage would have a negligible impact on individual tree and stand vigor. Overall, stand susceptibility to insect attack, disease infection, and fire would be expected to remain high within the TSZ. Regenerated stands and density management stands outside of the TSZ would not be overstocked and would be more vigorous, healthy, and resilient to environmental changes than present conditions.

4.2. Cumulative Impacts - Watershed/Soils

a) Direct and Indirect Effects (Sixth field scale)

<u>Little Butte Creek Watershed</u>

Little Butte North Fork Lower- There would be an increase of approximately 117 acres of non-recovered openings within the TSZ from this proposed alternative. This equates to a 6% increase in openings. Although quantification of these effects on stream channels is unknown, it is expected that this would slightly contribute to the risk for degradation of local stream channels in this drainage from flooding if a rain-on-snow event were to occur. (See discussions on TSZ issues for effects of flooding on channel morphology and aquatic habitat.) This is not expected to preclude meeting identified ACS and Little Butte Creek Watershed Analysis objectives in this sixth field watershed in the long term. Due to the distance of the timber harvest units from designated critical habitat of listed fish species, and by restricting harvest to areas outside of Riparian Reserves, the effects to listed fish species are expected to be negligible

Salt/Long Branch- There would be an increase of approximately 70 acres of non-recovered openings within the TSZ from this proposed alternative. This equates to a 3% increase in openings. Although quantification of these effects on stream channels is unknown, it is expected that this

would have a negligible effect on the risk for degradation of local stream channels if a rain-on-snow event were to occur.(See discussions on TSZ issues for effects of flooding on channel morphology and aquatic habitat.) It is also not expected to preclude meeting identified ACS and Little Butte Creek Watershed Analysis objectives in this sixth field watershed. Due to the distance of the timber harvest units from designated critical habitat of listed fish species, and by restricting harvest to areas outside of Riparian Reserves, the effects to listed fish species are expected to be negligible

Central Big Butte Watershed

Big Butte South Fork Lower-There would be an increase of approximately 21 acres of non-recovered openings within the TSZ from this proposed alternative. This equates to a 3% increase in openings. Although quantification of these effects on stream channels is unknown, it is expected that this would have a negligible effect on the risk for degradation of local stream channels if a rain-on-snow event were to occur. (See discussions on TSZ issues for effects of flooding on channel

morphology and aquatic habitat.). This is not expected to preclude ACS objectives.

All of the proposed harvest units in the Big Butte South Fork Lower watershed fall within the Butte Falls Geologic Municipal Watershed which includes the Ginger Springs Recharge Area. The Ginger Springs drainage would have a 6% increase of non-recovered openings in the TSZ from this alternative. Although quantification of effects on stream flows is not known, this increase is expected to contribute slightly to risk levels for local streams (Ginger and Doubleday Creeks), if a rain-on-snow event were to occur. Due to the distance of the timber harvest units from designated critical habitat of listed fish species, and by restricting harvest to areas outside of Riparian Reserves, the effects to listed fish species are expected to be negligible

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

None anticipated

c) Irreversible/Irretrievable Commitments of Resources

None anticipated

d) Cumulative Effects (Fifth field scale)

Little Butte Creek Watershed(238,598 acres)- It is anticipated that increases in the openings of the TSZ from this proposed alternative would have a negligible effect on the level of risk to this scale of watershed effects. Again, quantification of this effect on stream flows is unknown. Current condition for this watershed in terms of TSZ openings is considered to be at a low-moderate level.

Central Big Butte Watershed (58,054 acres)- It is anticipated that increases in the openings of the TSZ from this proposed alternative would have a negligible effect on the level of risk to this scale of watershed effects. Again, quantification of this effect on stream flows is unknown. Current condition for this watershed in terms of TSZ openings is estimated to be at a moderate level.

4.3. Aquatic Habitat/Water Quality

a) Direct and Indirect Effects

Although 185 acres of non-recovered canopy openings will be created within the TSZ under this alternative, individual openings will be no more than 2 acres in size and are therefore expected to have a negligible impact on peak flows within these watersheds. Stands identified for this treatment are infested with mistletoe and would have a life expectancy of approximately 10 years if left untreated. The treatment would be expected to indirectly result in an acceleration of achieving the characteristics of a healthy, mature stand that would provide sufficient tree canopies to provide the long-term habitat elements necessary for healthy aquatic ecosystems. The effects of road, fuel treatment, culvert replacement, and habitat restoration actions would be the same as for Alternative 3.

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

Same as alternative 3.

c) Irreversible/Irretrievable Commitments of Resources

None anticipated.

d) Cumulative Effects

No effects to the long-term productivity of fish and aquatic habitat would be expected from all prescriptions within the proposed timber harvest. The effects of road, fuel treatment, culvert replacement, and habitat restoration actions would be the same as for Alternative 2.

e) Determination of Effects on Southern Oregon/Northern California (SONC) Coho Salmon, SONC Critical Habitat, and Klamath Mountains Province (KMP) Steelhead Trout from Implementation of the Proposed Alternative - Lick Creek Culvert Replacement.

Same as alternative 3.

e) Determination of Effects on Southern Oregon/Northern California (SONC) Coho Salmon, SONC Critical Habitat, and Klamath Mountains Province (KMP) Steelhead Trout from Implementation of the Proposed Alternative - All Other Proposed Actions

Same as alternative 3.

4.4. Fuels Hazard Reduction

a) Direct and Indirect Effects

Same as alternative 3.

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

Same as alternative 3.

c) Irreversible/ Irretrievable Commitments Resources

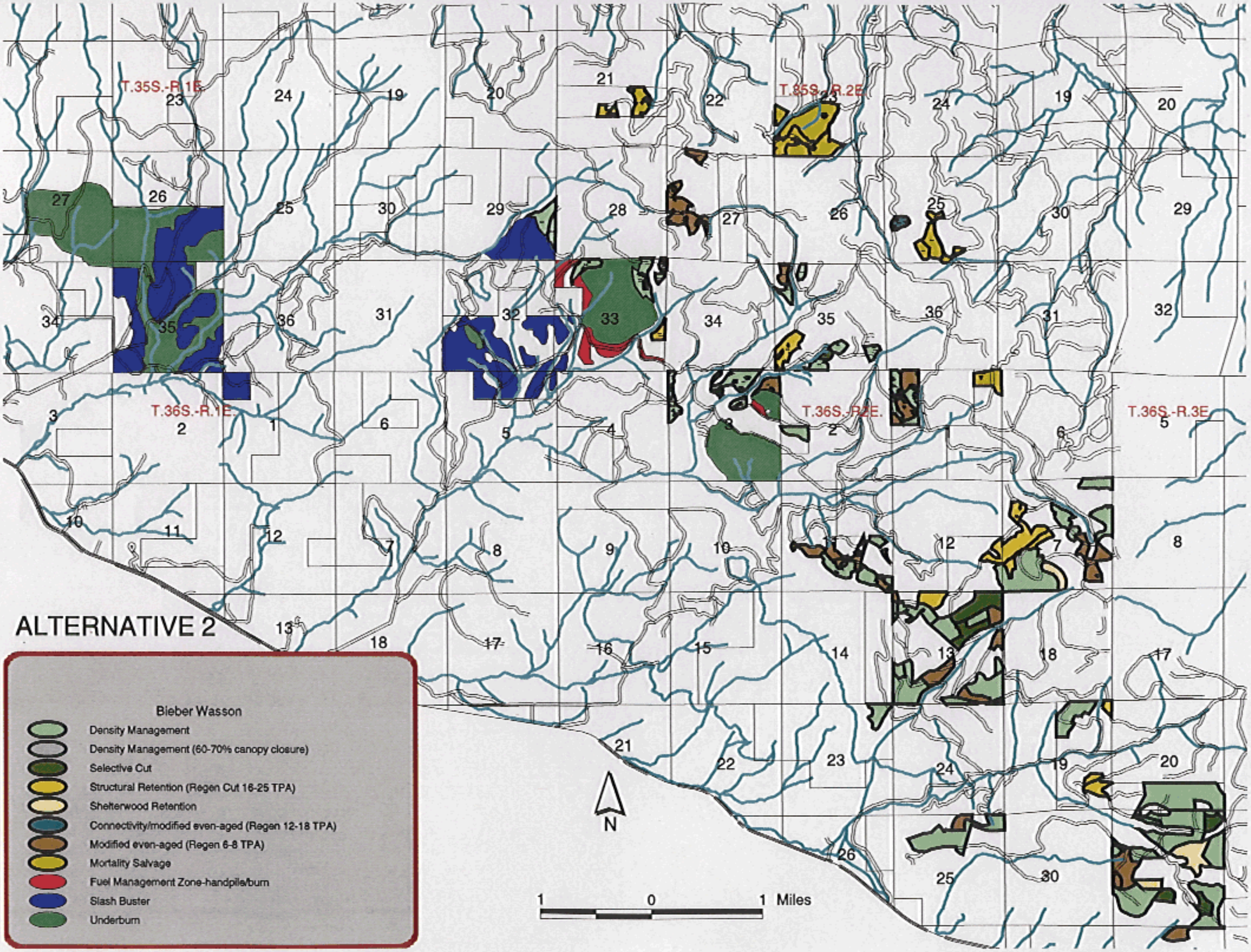
Same as alternative 3.

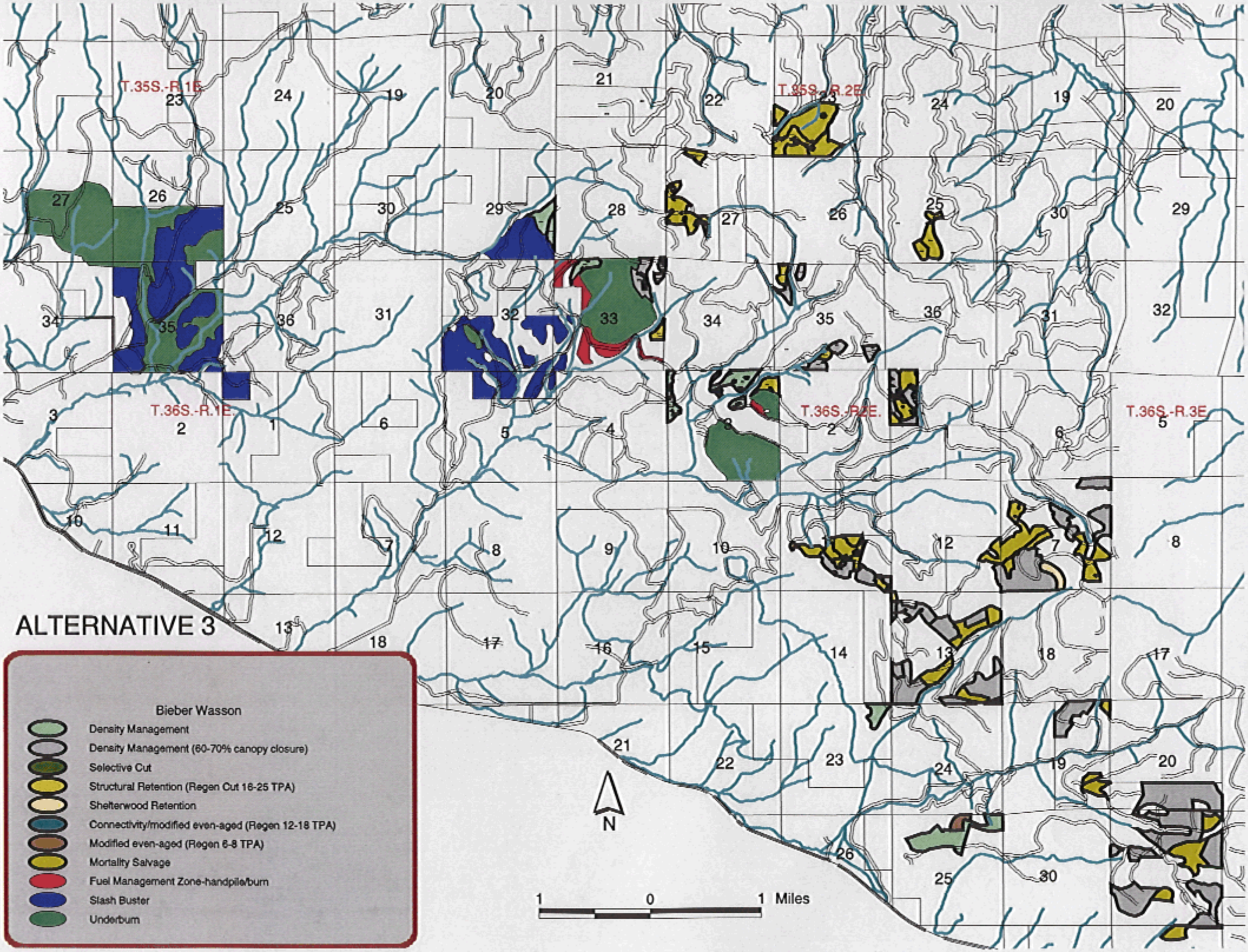
d) Cumulative Impacts

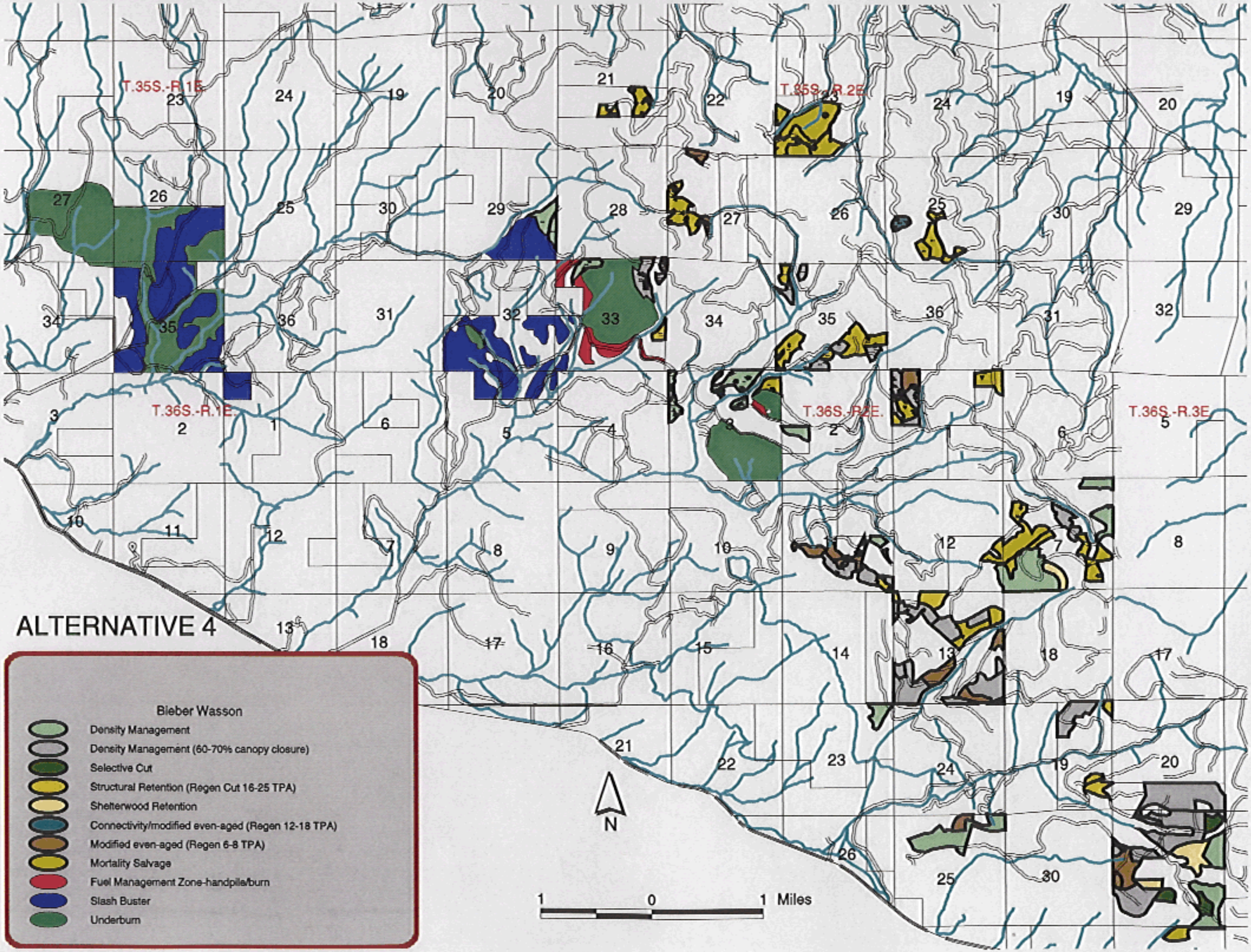
Same as alternative 3.

V. List of Preparers

NAME	RESPONSIBILITIES
John Osmanski, Forester	Silvicultural Prescription Writer
Linda Hale, Wildlife Biologist	T&E Animals
Jayne LeFors, Fisheries Biologist	Fisheries/ Aquatic Ecosystems
John Dinwiddie, Fuels Specialist	Fuels/Air Quality
Ken Van Etten, Soil Scientist/Hydrologist	Soils, Water, Wetlands, Floodplains
Doug Kendig, Riparian Reserve Coordinator	Riparian/Special Status and Survey & Manage Plants
Amy Sobiech, Forestry Technician	Cultural Resources
Robert Smith, Engineer	Engineering
Aaron Thayer, Forester	Layout
John Bergin, Ecosystem Planner	Planning
Jean Williams, Environmental Coordinator	EA Writer


ALTERNATIVE 2
T.35S.-R.1E.
T.35S.-R.2E.
T.36S.-R.1E.
T.36S.-R.2E.
T.36S.-R.3E.
Bieber Wasson
Density Management
Density Management (60-70% canopy closure)
Selective Cut
Structural Retention (Regen Cut 16-25 TPA)
Shelterwood Retention
Connectivity/modified even-aged (Regen 12-18 TPA)
Modified even-aged (Regen 6-8 TPA)
Mortality Salvage
Fuel Management Zone-handpile/burn
Slash Buster
Underburn
N
1 0 1 Miles


ALTERNATIVE 3
T.35S.-R.1E.
T.35S.-R.2E.
T.36S.-R.1E.
T.36S.-R.2E.
T.36S.-R.3E.
Bieber Wasson
Density Management
Density Management (60-70% canopy closure)
Selective Cut
Structural Retention (Regen Cut 16-25 TPA)
Shelterwood Retention
Connectivity/modified even-aged (Regen 12-18 TPA)
Modified even-aged (Regen 6-8 TPA)
Mortality Salvage
Fuel Management Zone-handpile/burn
Slash Buster
Underburn
N
1 0 1 Miles


ALTERNATIVE 4
T.35S.-R.1E.
T.35S.-R.2E.
T.36S.-R.1E.
T.36S.-R.2E.
T.36S.-R.3E.
Bieber Wasson
Density Management
Density Management (60-70% canopy closure)
Selective Cut
Structural Retention (Regen Cut 16-25 TPA)
Shelterwood Retention
Connectivity/modified even-aged (Regen 12-18 TPA)
Modified even-aged (Regen 6-8 TPA)
Mortality Salvage
Fuel Management Zone-handpile/burn
Slash Buster
Underburn
N
1 0 1 Miles

Project: APT 98 11 - Dicover-Wasson
Date: 8/20/98
Resource Area: Butte Falls
County: Jackson
USGS Quad: Lake Creek, Mt. McLoughlin, Obenchain, Brownsboro - 7.5'

~~Appendix A~~
Appendix A AUG 24 1998
Medford BLM District
STATE PARKS AND RECREATION DEPARTMENT

For further information contact: Kate Winthrop Phone #: 770-2321

****

The criteria of effect listed in 36CFR800.9 (1986) have been applied to the above referenced project on the cultural resources identified in the attached report.

X In accordance with 36CFR800.5(b), we have determined that the proposed undertaking will have NO EFFECT. We will retain documentation and proceed with the undertaking unless you object within 15 days of receipt of this notice.

___ In accordance ith 36CFR800.5(d), we have determined that the proposed undertaking will have NO ADVERSE EFFECT. We will retain documentation and proceed with compliance unless you object within 30 days of receipt of this notice (see below):

___ The project is covered under PMOA: _____ with a __ day time frame;

___ Attached is a research design for DATA RECOVERY option;

___ Attached are formal determinations of eligibility.

___ In accordance with 36CFR800.5(e), we have determined that the proposed undertaking will have an ADVERSE EFFECT. We will retain documentation and proceed with compliance unless you object within 30 days.

****

X CONCUR
___ DO NOT CONCUR
REMARKS:

DATE: SEP 14 1998

Signature

NOTED
L. GILSEN

TO: JEAN WILLIAMS
FROM: DOUGLAS KENDIG BOTANY AND RIPARIAN SPECIALIST
DATE: JULY 29, 2000
SUBJECT: **BIEBER WASSON EA.**

SPECIAL STATUS PLANTS AND SURVEY AND MANAGE PLANTS AND FUNGI - Appendix B

SPECIAL STATUS VASCULAR PLANT FOR BIEBER WASSON E.A

Current Condition

Southwest Oregon is one of the most botanically diverse areas in the United States. The Klamath Mountains are one of the oldest formations in Oregon while the southern Cascades are one of the most recent. The physiographic components of the area such as topographic relief, variable aspects, broad climatic conditions shape a wide range of plant communities. Historic plant migrations north and south influence the bio-diversity in the region. The Little Butte watershed is located in the foothills and lower slopes of the Cascade Range where forest communities merge with mixed hardwood, chaparral and oak/grassland communities.

Usually, locations of special status vascular plants are discovered during surveys for projects, mainly timber sales, and more recently plantation maintenance and restoration work. Currently, thirty-three Special Status Vascular Plant Species are known in the Butte Falls R.A. on over 230 sites. Little Butte Creek watershed has relatively few rare plant species compared to other watersheds in the area.

Survey Results

Special Status Plant surveys were conducted on approximately 3665 acres within the project area in 1998. Additional project areas were surveyed in 1999 totaling 556 acres and 2100 acres in 2000. Surveys were conducted throughout the project area under contract by field botanists using intuitively controlled transect methodology with emphasis on special habitats such as riparian areas, meadows, rock outcrops, as well as mature forest habitat. The Medford District Special Status Plant List FY 1998, 1999 and 2000 provides a list of Bureau Sensitive and Bureau Assessment and S&M category 1,2 species likely to occur on the district. A narrower list of target species likely to occur in the project area was created for field use during surveys. While completing the surveys, a comprehensive list of all vascular plants was created by unit. Three species were discovered on 21 sites (see table 1 below).

All areas within project unit boundaries were surveyed. In addition, suitable habitat within 200' of the outside boundaries of regeneration harvest units was surveyed to meet protocol.

Special Status Vascular plant surveys and S&M surveys have been completed in the following sections:
35-2E-21, 23, 25, 27, 29, 32, 35
36-1E-1
36-2E-1, 2, 3, 11, 12, 13, 23, 25

36-3E-7, 19, 20, 29, 32

In addition, all surveys for Special Status Vascular plant S&M vascular plants have been completed for proposed timber harvest units in the following sections:
T35S-R2E- Sec 33

Fuel treatment units programmed for survey in FY 2001 are listed below (see Table 2).

Protection Measures
Each vascular plant species and site will be evaluated to determine the appropriate level of protection to ensure viability of the species and habitat. Some species and sites may benefit in the long-term from pro-active management activities during periods of dormancy or senescence such as fall burning. Other situations may require protection buffers in the range of 100-300 ft radius, although the exact buffer size will be determined by considering a number of ecological and population variables, including aspect, slope, canopy closure, herbaceous ground cover, moss cover, incident solar radiation, local population abundance, and density where appropriate that will vary from site to site. Risk assessments will be conducted on a site by site basis to determine the potential risks and impacts to the population and host based on the prescribed activity and site conditions.

Protection measures will be implemented with the intention of managing known sites to conserve the species and populations and to ensure that actions authorized, funded , or carried out do not contribute to the need to list any of these species as T/E in accordance with the Management Recommendations for Vascular Plants, Dec. 1998 and BLM Manual, 6840 Special Status Species Management Sept. 1988.

Fritillaria gentneri
One Federally listed Threatened species, *Fritillaria gentneri*, occurs within portions of the proposed project area in the Butte Falls RA. Typical habitat is generally on low elevation hillocks just above the valley floor in a variety of chaparrel, hardwood and mixed hardwood/conifer vegetation communities. The nearest known location is approximately 5 miles to the north. Vascular plant surveys have been completed for all Timber Sale units and related harvesting activities. Dense conifer stands are not suitable habitat for this species and none was found. The timber sale project would have **no affect** on *Fritillaria gentneri*. The landscape fuels treatment project occurs in suitable habitat. Surveys on all units have not been completed (see Beiber Wasson Fuels Unit list below). Vascular plant surveys for the landscape fuel treatment project would be completed in 2001 and any necessary mitigation measures implemented before the project Record of Decision is signed. The landscape fuel treatment project would have **no affect** on *Fritillaria gentneri*.

Description of *Fritillaria gentneri*
Fritillaria gentneri, *listed as endangered with the FWS, occurs in the project area. A critical* habitat determination has not been made. The Final Rule for Fritillaria gentneri, January 10, 2000, describes three suitable habitats,

1) oak woodlands dominated by *Quercus garryana*,
2) mixed hardwood forest dominated by *Quercus kelloggii*, *Quercus garryana*, and *Arbutus menziesii*,
3) coniferous forests dominated by *Arbutus menziesii* and *Pseudotsuga menziesii*.

Fritillaria gentneri is found only in Jackson and Josephine Counties with most populations within a seven mile radius of the Jacksonville Cemetery. Population size is near the threshold necessary for long-term genetic integrity. However, Guerrant believes that *Fritillaria gentneri* may be sterile and that the plant is largely reproducing asexually.

Surveying for presence and monitoring the numbers of this species produces variable and unreliable results. An accurate count of the number of individuals is difficult to obtain because many plants remain dormant for several years and flowering plants may be grazed before setting flowers and therefore impossible to locate and census.

Factors affecting the species include:
A. The present or threatened destruction, modification, or curtailment of its habitat or range. Small populations scattered across the urban interface subject this species to losses from direct and indirect effects. Indirect effects, usually associated with development, alter the habitat which makes conditions unsuitable for the species. Obviously, direct damage to small populations can extirpate the species from parts of its range.
B. Overutilization for commercial, recreational, scientific, or educational purposes. Recreational collection and collection for cultivation could adversely affect the species, especially along roads.
C. Disease or predation. Many individuals get browsed before producing mature fruit. Future generations and the soil seed bank become depleted.
D. The inadequacy of existing regulatory mechanisms. Before being listed as endangered by the FWS, the only protection came from two state laws effective only on state owned or leased lands.
E. Other natural or manmade factors affecting its continued existence. Years of fire suppression have led to changes in habitat structure and composition. This has produced a less-than-optimal habitat condition that is also susceptible to catastrophic fire. Small, isolated populations makes the species susceptible to decreased vigor and viability, extirpation from environmental events, and roadside maintenance.

The following table summarizes the results of special status plants discovered during surveys for this E.A.

Table 1 **SPECIAL STATUS VASCULAR PLANTS**

SPECIES	SURVEY STRATEGY	NUMBER OF SITES	GENERAL DESCRIPTION OF POPULATION	MITIGATION - MANAGEMENT STRATEGY
Cypripedium fasciculatum	S&M 1,2 BSO	1	Single individual population.	1. Population buffered with 100-300 feet buffers
Cypripedium montanum	S&M 1,2 BTO	19	Single individuals, scattered clusters, to extensive large areas.	1. Discovered outside unit. 2. Protected within Riparian Reserve. 3. Unit or portions of units dropped. 4. Population buffered with 100-300 feet buffers
Plagiobothrys glyptocarpus	BAO	1	Annual species associated with riparian zones on igneous substrate.	1. Protected within Riparian Reserve.

Table 2 **BIEBER WASSON FUELS PROJECT UNITS**

T-R	Secs.	EXA_UNIT	COMMENT	ACRES
T.35S., R.1E.	26,27,35	UB-6	Underburn	445
T.35S., R.1E.	26,35	SB-3	Slash Buster	222
T.35S., R.1E	35	UB-1	Underburn	255
T.35S., R.2E.	33	UB-3	Underburn	235
T.35S., R.2E	33	FMZ-2	FMZ - handpile/burn	19
T.35S., R.1E	35	SB-11	Slash Buster	106
T.35S., R.2E	33	FMZ-6	FMZ - handpile/burn	16
T.35S., R.1E	35	SB-2	Slash Buster	56
T.35S., R.2E	33	SB-4	Slash Buster	43
T.35S., R.2E	33	SB-6	Slash Buster	2
T.36S., R.2E	5	SB-7	Slash Buster	187
T.35S., R.1E	35	SB-9	Slash Buster	93
T.35S., R.2E	33	FMZ-3	FMZ - handpile/burn	44
T.35S., R.2E	33	FMZ-5	FMZ - handpile/burn	1
T.35S., R.2E	33	FMZ-1	FMZ - handpile/burn	7
T.35S., R.2E	33	SB-10	Slash Buster	10
T.35S., R.2E T.36S., R.2E	33 5	SB-8	Slash Buster	15
T.35S., R.2E T.36S., R.2E	33 5	SB-5	Slash Buster	24

SURVEY AND MANAGE FUNGI, VASCULAR AND NON VASCULAR PLANTS SPECIES

OVERVIEW

The Butte Falls Resource Area botanists have acquired local knowledge of the bryophyte, lichen and fungi species and habitat from intensive surveys conducted on over 6000 acres from the fall of 1998 through the spring of 2000. Single visit fungi surveys, not to current protocol standards, were completed on the project area in November/December 1998 and April-June 1999. These surveys provided over 500 new S&M/PB sites and comprehensive species lists by unit. During the course of Survey and Manage surveys within the Beiber Wasson project area, a total of 575 sites were discovered that included 46 species. Of the 575 sites, approximately 240 sites were species that required protection measures.

Surveys were conducted for vascular, non-vascular and fungi Survey and Manage (S&M) and Protection Buffer (PB) species within the project areas. Surveys for vascular plant S&M species were included with Special Status plant surveys.

The Beiber Wasson project area was inventoried for fungi using intuitive controlled, random transect surveys. Surveys were conducted for all Protection Buffer and Survey and Manage 2 fungi species, specifically targeting the species known to occur in the area and their potential habitat. Surveys were conducted at two to three week intervals in accordance with the newly established protocol described in the BLM-Instruction Memorandum No. OR 200-018. Fall fungi surveys were conducted partially by area botanists and a team of Resource Area employees trained to identify the PB and S&M fungi species and partially by a qualified contractor . The contractor created a fungi species list by unit. To help with identification, the BLM consulted with a local expert mycologist, Gordon Larum, for verification of difficult specimens during the fall and spring survey seasons.

Spring fungi surveys targeted one PB fungi species, *Sarcasoma mexicana*. Surveys were conducted partially by area botanists trained to identify the PB and S&M fungi species and partially by 2 qualified contractors . The contractors created a comprehensive fungi species list by unit.

SURVEY RESULTS

All S&M and PB plant and fungi species requiring pre-disturbance surveys were included on the species list for survey within the project area. Potential habitat exists and near-by known sites have been documented for the fungi *Otidea leporina, Otidea onotica, Bondarzewia mesenterica* and *Sarcosoma mexicana*, and the bryophytes *Buxbaumia viridis*, and *Ptilidium californicum*. *Bondarzewia mesenterica* is a polypore fungi that occurs on large stumps in the fall. *Buxbaumia viridis* can be found growing on large decaying logs in a variety of forest types. *Ptilidium californicum* generally occurs in the BFRA on the trunk of large conifer trees where

cooler and more humid micro-climatic conditions are maintained throughout the summer at elevations greater than 3800 feet in a variety of forest types.

Several other species were considered potential candidate species to occur in the project area and were included concurrently in pre-disturbance surveys species list even though no known sites occur in adjacent watersheds or the vicinity. Several species range overlaps the timber sale area, including the fungi *Sowerbyella rhenana and Otidea smithii*, and the bryophyte *Kurzia makinoana*. Although potential habitat exists they were not expected to occur in the area. Similarly, the fungi *Bridgeoporus nobilissimus* would have been detected if it had occurred in the area. Potential habitat descriptions for all of the above species can be found in survey protocols (BLM Instruction Memoranda Nos. OR-98-38, OR-98-051, OR-2000-017, OR-2000-018).

Three snow storms occurred during that period which interrupted our survey schedule. Access to the units was temporarily blocked and units were temporarily covered by snow prohibiting surveys for short periods of time. Consequently, the 2 to 3 week interval between surveys was interrupted on some units. All units surveyed in the fall of 1999 received 2 surveys when surveys were terminated due to persistent snow and blocked roads. In accordance with the survey protocol described in OR-2000-18, these surveys constitute a reasonable survey effort and meet the objective of the protocol. All units surveyed for fungi in the spring of 2000 received 3 surveys.

Fall fungi surveys were initiated on November 2, 1999 and completed on December 29, 1999 Spring fungi surveys for *Sarcasoma mexicana* were initiated on April 20 and completed on June 4, 2000.

Lichen and Bryophyte surveys were conducted by area botanists between January 7, 1999 and May 8, 2000, usually independent of other species surveys. The project area was inventoried for Lichen and Bryophytes using intuitively controlled, random transect surveys. Surveys were conducted for all PB and S&M category 2 fungi species, specifically targeting the species known to occur in the area and their known or suspected habitat. Survey notes were kept documenting the weather and ecological conditions present at each site. This information and the results of each survey are now a part of the record of this sale.

All areas within project unit boundaries were surveyed. In addition, suitable habitat within 200' of the outside boundaries of regeneration harvest units was surveyed to meet protocol.

Sites were mapped and voucher specimens were collected, identified and processed according to current taxonomic standards. Specimens will be forwarded to the regional mycologist. Survey and site data will be input into the district survey and manage database or the ISMS data base.

Lichens and bryophytes surveys were completed during between 1999 and 2000. S&M fungi and Non-vascular plant surveys have been completed in the following sections:

T35S-R2E- Sec 21, 23, 25, 27, 29, 32, 35
T36S-R1E- Sec1
T36S-R2E- Sec1, 2, 3, 11, 12
T36S-R3E-Sec 7,20

In addition, all surveys for S&M fungi and Non-vascular plants have been completed for proposed timber harvest units in the following sections:
T35S-R2E- Sec 33

Surveys have not been completed for all spring and fall fungi on proposed timber harvest units nor bryophyte and lichen surveys on all proposed fuel treatment units. A list of units requiring surveys in FY 2001 is listed below in Table 7 .

Protection Measures
All newly discovered fungi and bryophyte sites requiring protection (generally S&M category 1,2, and PB species) would be protected with a buffer in the range of 100-300 ft radius generally, although the exact buffer width will be determined by considering a number of ecological and population variables, including aspect, slope, canopy closure, herbaceous ground cover, moss cover, incident solar radiation, local population abundance, and density where appropriate that will vary from site to site. S&M category 3and 4 do not require protection measures, but may be protected in certain cases. Lichen species, such as *Bryoria tortuosa, Lobaria hallii, and Dendriscocaulon intriculatum* populations occur on the boles of hardwoods generally within proposed fuel treatment areas or the edges of proposed timber harvest units. Risk assessments will be conducted on a site by site basis to determine the potential risks and impacts to the species and host based on the burn prescription and site conditions. Where these lichen species occur in timber harvest units, generally a 100 foot protection buffer would be established

Protection measures will be implemented with the intention of maintaining existing site and microsite conditions in accordance with the Management Recommendations for Survey and Manage Fungi (Castellano & O'Dell 1997 V2.0,Management Recommendations for Vascular Plants, Dec. 1998, Management Recommendations for Survey and Manage Lichens, V2.0, and Draft Management Recommendations for Bryophytes, Installment 1).

The following tables list all S&M and PB Non-Vascular plants and fungi by group, species, status, number of sites and an abstract of appropriate mitigation measures discovered during field surveys.

Table 3 PROTECTION BUFFER SPECIES

SPECIES	SURVEY STATEGY	NUMBER OF SITES	GENERAL DESCRIPTION OF POPULATION	MITIGATION - MANAGEMENT STRATEGY
Sarcasoma mexicana	Protection Buffer	69	Single individual bodies to large groups or scattered clusters. Wide variety of conifer forest habitats.	1. Discovered outside unit. 2. Protected within Riparian Reserve. 3. Unit or portions of units dropped. 4. Population buffered with 100-300 feet buffers
Aleuria rhenana (Sowerbyella rhenana)	Protection Buffer	0	Included in search	
Otidea leporina	Protection Buffer	0	Included in search	
Otidia onotica	Protection Buffer	0	Included in search	
Otidea smithii	Protection Buffer	0	Included in search	
Polyozellus multiplex	Protection Buffer	0	Included in search	
Pedicularis howellii	Protection Buffer	0	Included in search)	
Brotherella roelli	Protection Buffer S&M 1,3	0	Included in search	
Buxbaumia viridis	Protection Buffer	1	Single individual site. Found under dense, shady, humid coniferous forests generally on logs & stumps in advanced stages of decay.	1. Population buffered with 100 foot buffer.
Ptilidium californicum	Protection Buffer S&M 1,2	45	Single individual sites to extensive large areas, generally found at the base of large diameter conifers Common in mid elevation Cascade area	1. Discovered outside unit. 2. Protected within Riparian Reserve. 3. Unit or portions of units dropped. 4. Population buffered with 100-300 feet buffers
Rhizomnium nudum	Protection Buffer	0	Included in search	
Tetraphis geniculata	Protection Buffer S&M 1, 3	0	Included in search	
Ulota meglospora	Protection Buffer	0	Included in search	

Table 4 **GROUP - LICHEN**

SPECIES	SURVEY STRATEGY	NUMBER OF SITES	GENERAL DESCRIPTION OF POPULATION	MITIGATION - MANAGEMENT STRATEGY
Hypogymnia duplicata	S&M 1,2,3	0	Included in search	
Lobaria linita	S&M 1,2,3	0	Included in search	
Pseudocyphellaria rainierensis	S&M 1,2,3	0	Included in search	
Dendriscocaulon intriculatum	S&M 1,3	7	Conifer and Conifer/Hardwood Mature-Old Growth Forest Stands. On Black oak, at edge of mixed conifer, mature stand	Limit flame lengths and intensity in populated areas or establish 100 foot buffers. 100 foot buffer around population in Timber Sales
Bryoria tortuosa	S&M 1,3	2	Generally, large areas in oak woodland and mixed hardwood/conifer community on bark or wood of hardwood or conifers, semi-open conifer stands at low elevation transitional areas between mesic conifer forest communities and xeric hardwood forests	Limit flame lengths and intensity in populated areas or establish 100 foot buffers.100 foot buffer around population in Timber Sales
Leptogium rivale	S&M 1,3	3	Aquatic lichen found in intermittent and perrenial streams.	Full riparian reserve buffers.
Lobaria hallii	S&M 1,3	5	Conifer and Conifer/Hardwood Mature-Old Growth Forest Stands Found on hardwoods in low- to mid-elevation riparian forests	Limit flame lengths and intensity in populated areas or establish 100 foot buffers. 100 foot buffer around population in Timber Sales
Calicium viride	S&M 4	6	Rather common throughout area.	None
Collema nigrescens	S&M 4	17	Common throughout area.	None
Leptogium saturninum	S&M 4	5		None
Lobaria pulmonaria	S&M 3,4	43	Common throughout area.	None
Mycocalicium subtile	S&M 4	3		None
Nephroma helveticum	S&M 4	25	Common throughout area.	None
Nephroma resupinatum	S&M 4	29	Common throughout area.	None
Peltigera collina	S&M 4	12	Rather common throughout area.	None
Peltigera pacifica	S&M 4	2		None
Peltigera venosa	S&M 4	9		None

Pannaria mediterranea	S&M 4	2		None
Pseudocyphellaria anthrapsis	S&M 4	31	Common throughout area.	None
Sticta fulginosa	S&M 4	8	Rather common throughout area.	None

Table 5 **BRYOPHYTES SPECIES**

SPECIES	SURVEY STATEGY	NUMBER OF SITES	GENERAL DESCRIPTION OF POPULATION	MITIGATION - MANAGEMENT STRATEGY
Diplophyllum plicatum	S&M 1,2	0		
Kurzia mikinoana	S&M 1,2	0		
Marsupella emarginata var. aquatica	S&M 1,2	0		
Tritomaria exsectiformis	S&M 1,2	0		
Anatrichia curtipendula	S&M 4	22	Common throughout area.	None

Table 6 **GROUP - FUNGI**

SPECIES	SURVEY STATEGY	NUMBER OF SITES	GENERAL DESCRIPTION OF POPULATION	MITIGATION - MANAGEMENT STRATEGY
Bondarzewia mesenterica	S&M 1,2,3	13	Found in or around large conifer trees or stumps (*PIPO* in BFRA) in late-successional coniferous forests	1. Discovered outside unit. 2. Protected within Riparian Reserve. 3. Unit or portions of units dropped. 4. Population buffered with 100-300 feet buffers
Cantharellus formosus	S&M 1,3	44	Widespread throughout disturbed sites in mature conifer forests.	Documented populations. No protection required.
Helvella compressa	S&M 1,3	2		Population buffered with 100-300 feet buffers
Helvella maculata	S&M 1,3	10	Rather common throughout area.	Population buffered with 100-300 feet buffers
Plectania milleri	S&M 1,3	40	Rather common in mid elevation Cascade area	1. Discovered outside unit. 2. Protected within Riparian Reserve. 3. Unit or portions of units dropped. 4. Population buffered with 100-300 feet buffers
Pithya vulgaris	S&M 1,3	14	Rather common in mid elevation Cascade area.	1. Discovered outside unit. 2. Protected within Riparian Reserve. 3. Unit or portions of units dropped. 4. Population buffered with 100-300 feet buffers
Ramaria rubripermanens	S&M 1,3	5	Uncommon in Butte Falls	Population buffered with 100-300 feet buffers
Ramaria rubrievanescens	S&M 1,3	2	Uncommon in Butte Falls	Population buffered with 100-300 feet buffers
Ramaria thiersii	S&M 1,3	2	Uncommon in Butte Falls	Population buffered with 100-300 feet buffers
Clavariadelphus truncatus	S&M 3,4	3	Rather common in Butte Falls	None
Clavulina cristata	S&M 3,4	1	Rather common in Butte Falls	None
Cantharellus tubaeformis	S&M 3,4	1	Uncommon in Butte Falls	None
Gomphus floccosus	S&M 3	21	Common in Butte Falls	None
Gyrometra esculenta	S&M 3,4	2	Rather common in Butte Falls	None
Mycena lilacifolia	S&M,3	1	Uncommon in Butte Falls	None
Phlogiotis helveloides	S&M 3,4	3	Rather common in Butte Falls	None
Ramaria coulterae	S&M 3	3	Uncommon in Butte Falls	None
Sarcosphaera eximia	S&M 3	12	Rather common throughout area.	None

Sparissis crispa	S&M 3	2	Uncommon in Butte Falls	None

See Medford district Record of Decision and Resource Management Plan, 1995, page 54-55.

AREAS NOT SURVEYED AND REQUIRING SURVEYS IN FY 2001
Bieber-Wasson

Table 7

Fall 2000 Fungi Surveys

Township	Range	Section	Unit #	Acres
FUELS TREATMENT UNITS				
35S	**2E**	**29**	SB-1	13
35S	**2E**	**32**	UB-2	13
35S	**2E**	**33**	FMZ-3	12
			FMZ-6	14
			UB-3	73
			TOTAL	**125**
TIMBER SALE UNITS				
36S	**3E**	**29**	01	85
			02	12
			TOTAL	**97**
			GRAND TOTAL	**222**

Lichen/Bryophyte Surveys

Township	Range	Section	OI#	Acres
FUELS TREATMENT UNITS				
35S	**2E**	**29**	SB-1	13
35S	**2E**	**32**	UB-2	13
35S	**2E**	**33**	FMZ-3	12
			FMZ-6	14
			UB-3	73
			TOTAL	**125**

Spring 2001 Fungi Surveys

Township	Range	Section	Unit #	Acres
36	**2E**	**13**	01	20
			02	3
			03	4
			04	21
			05	47
			06	37
			07	9
			08	45
			09	23
			11	11
			12	12
			13	12
			14	5
			15	7
			16	12
			TOTAL	**268**
36S	**2E**	**23**	003	18
			TOTAL	**18**
36	**2E**	**25**	01	73
			03	11
			TOTAL	**84**
36 BW	**3E**	**19**	02	5
			04	6
			05	14
			06	38
			TTL	**63**
36 BW	**3E**	**29**	12	46

			15	12
			TTL	**58**
36 BW	**3E**	**32**	05	14
			TTL	**14**
			GRAND TOTAL	**505**

POTENTIAL SPECIAL STATUS PLANT SPECIES IN LITTLE BIG BUTTE WATERSHED

Table 8

SPECIES	CURRENT STATUS
Allotropa virgata	SEIS
Cimicifuga elata	BSO
Cypripedium fasciculatum	BSO, SEIS
Cyprepedium montanum	SEIS
Illiamna latibracteata	BAO
Limnanthes floccosa ssp.bellingeriana	BSO
Lithophragma heterophyllum	BTO
Mimulus douglasii	BWO
Nemacladus capillaris	BAO
Perideridia howellii	BWO
Plagiobothrys glyptocarpus	BAO
Romanzoffia thompsonii	BSO
Scribnaria bolanderii	BWO

Status Codes:

FE Federal Endangered (USFW) - in danger of extinction throughout a significant portion of its range
FT Federal Threatened (USFW) - likely to become endangered species within the foreseeable future
SoC Species of Concern (formerly Federal Candidate 1, 2, 3) (USFW) - under consideration for listing, but additional information is needed to support a proposal to list under the Endangered Species Act

SE State Endangered - in danger of extinction in the state of Oregon
ST State Threatened - listed as likely to become endangered by the state of Oregon
SC State Candidate - listing is pending, or appropriate, if immediate conservation action not taken

BSO Bureau Sensitive Oregon - ONHP List 1; Oregon Candidate. Generally these species are restricted in range within Oregon and have natural or human caused threats to their survival.
BAO Bureau Assessment Oregon - ONHP List 2; Species where population trends are monitored and may require a minimum amount of protection or mitigation BLM activities.
BTO Bureau Tracking Oregon - ONHP List 3 and 4

SM Survey & Manage - Northwest Forest Plan ROD, 1994, Table C-3 directs management of known sites and/or survey for new sites

1 Oregon Natural Heritage Rank, critically imperiled throughout its range
2 Oregon Natural Heritage Rank, imperiled throughout its range
3 Oregon Natural Heritage Rank, not rare, threatened throughout its range
4 Oregon Natural Heritage Rank, not rare, apparently secure throughout its range

VASCULAR PLANT SPECIES DESCRIPTION

Allotropa virgata (Candy Stick) is a saprophyte generally found in late-successional stands. The plant is terrestrial and very colorfully striped red and white. Habitat conditions vary from relatively open rock outcrops with shallow soils and moderate organic debris to more closed canopy sites with deeper soils.

Cimicifuga elata (Tall Bugbane) is a rare vascular plant which is associated with old-growth forests. No sites have been found in the Butte Falls R.A, however populations were discovered to the north and south of the resource area.

Cypripedium fasiculatum (Clustered Lady's-slipper) is a small orchid dependant upon conditions associated with late-successional and mature forest communities. They are terrestrial species adapted to partial to full canopy closure with a moderate accumulation of organic debris and litter necessary. They are deep rooted in soil. There appears to be a microrhizza association also.

Cypripedium montanum (Browny Lady's-slipper) is a showy flowered orchid dependant upon conditions associated with mid to later successional forest communities. They are terrestrial species adapted to partial to full canopy closure with a moderate accumulation of organic debris. They are deep rooted in soil. There appears to be a microrhizza association also.

Scribnaria bolanderii, known to occur within the watershed, is a rather inconspicuous native grass, generally associated with seasonally wet areas or seeps on rock cliffs. Known locations occur on sandstone and basalt rock outcrops and areas with shallow soils. This species is a Bureau Watch Species and is found with increasing regularity on predictable habitat. Bolander's grass has been found at scattered locations from southern California to Washington. Scribnaria bolanderii (Scribner's grass) was discover on andecitic rock outcrops throughout the project area.

Chlorogalum sp. nov. (Soap plant). Species discovered that merits protection but isn't listed on the federal, state or bureau Special Status Plant list. It is a small population of an unnamed discovered the previous year in an adjacent area.

Riparian

GROUP - AQUATIC MOLLUSKS	SURVEY STRATEGY	LOCATION	GENERAL DESCRIPTION OF POPULATION	MANAGEMENT RECOMMENDATION
Fluminicola sp.?*	None	T36-3E-19	Discovered at a spring.	Protected within established Riparian Reserve.
Fluminicola sp.?*	None	T36-3E-32	Discovered at a spring.	Protected within established Riparian Reserve.

*Two aquatic mollusk species were discover during project evaluation. However, the specific species has not been determined. They appear to be in the genus Fluminicola. Specimens have been collected and sent to the lab for identification.

REFERENCES

1. Native Plant Species Program, Bureau of Land Management, Final Draft, 10/16/97.
2. Fire Effects, Agropyron sp.
3. Management Recommendations for Survey and Manage Fungi, 1997, ver. 2.0, page 27-1.
4. R.O.D. for Amendments to Forest Service and Bureau of land management planning Documents within the Range of the Northern Spotted Owl, April 1994.
5. Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl, April 1994. Standards and Guidelines for Survey and Manage species, pages c-4 to c-6. Aquatic Conservation Strategy Objectives, pages B-11 to B-17. Standards and Guidelines pages C-30 to C-38.

3. BLM Riparian-Wetland Initiative for the 1990's, USDI, Sept. 1991.

4. Forest Ecosystem Management: An Ecological, Economic, Social Assessment, 1993, Chapter V, Aquatic Ecosystem Assessment.

5. Medford District ROD and Resource Management Plan, June 1995. Appendix C. Special Status Species, Species to be Protected Through Survey and Manage Guidelines and protection Buffer Species, pages 135-147. Riparian Reserves, pages 26 to 32.

Appendix C

TO: Bieber Wasson E.A. File July 15, 2000

FROM: Linda Hale, wildlife biologist

SUBJECT: Wildlife Report

DESCRIPTION OF THE EXISTING ENVIRONMENT:

The proposed projects are within the Big Butte Creek and Little Butte Creek 5th field watersheds. The Ginger Springs municipal watershed lies within these two 5th field watersheds. For a more complete description of the existing environment, see the Little Butte Creek and Central Big Butte Watershed Analysis reports and Ginger Springs Municipal Watershed Management Plan.

The Bieber Wasson proposed project area is mixed conifer, predominant Douglas fir with intermixed ponderosa pine, sugar pine, and white fir, and an understory of hardwood, including madrone, chinquapin, and oak. Openings with grass, wedgeleaf ceanothus, and white oak are scattered throughout the proposed project area where shallow, rocky soil occurs. Larger openings of oak savannah are present in the low elevation, south facing slopes in the western part of the proposed project area. These openings range from approximately 20 acres to over 200 acres. Cliffs are present in the southeast part of the proposed action area. Natural rocky openings where subsurface rock and rock outcrops preclude tree growth are scattered throughout the area.

Land ownership patterns and past harvest regimes have resulted in a fragmented landscape pattern in the proposed project area. Natural fragmentation also occurs, created by areas of grass, oak savanna, or open shrub land occurs between the timber patches in the lower elevations. Riparian areas provide dispersal corridors between the lower elevations and up slope habitat.

There are 9 spotted owl activity centers late successional reserves (LSR) within the proposed action area. In addition to the spotted owl activity centers, there are three other special designations for wildlife within the watershed. These are a (ROD) late successional connectivity block, (RMP) big game winter range and elk management area, and peregrine falcon management area.

T&E SPECIES

BALD EAGLE

Bald eagles occasionally forage along Little Butte Creek during the winter months. There are no known nest sites within the proposed project boundary. A proposal to de-list the eagle is currently being considered by USFW. A determination was made in July 2000 to delay the

decision until more information is processed.

NORTHERN SPOTTED OWL

Formal consultation with U.S. Fish and Wildlife Service (USFW) has been completed, and the project is covered under the programmatic consultation for timber sales in the Rogue Valley and South Coast Administrative Units (1-7-98-F-3210), dated September 18, 1998.

There is no critical habitat within the watershed.

Nine spotted owl sites located within the provincial radius (1.2 miles) of the project area have activity centers designated (ROD, pg. C-10). 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. These activity centers are established to preserve an intensively used portion of the breeding season home range. An additional spotted owl site was discovered in 1997 and does not have a designated activity center. This site would be protected from timber harvest.

Section 25, T353S, R02E is a RMP/ROD designated connectivity block. ROD recommendations are 25-30% of the connectivity block be maintained in late successional stages. Two hundred and twenty one acres of the best late successional habitat in the section have been deferred from harvest at this time.

Aerial photo interpretation of lands administered by Butte Falls Resource Area of Medford BLM within the Big Butte Creek and Little Butte Creek 5th field watershed delineated 12,539 acres northern spotted owl suitable habitat. This includes habitat suitable for nesting and dispersal habitat (roosting, foraging).

The proposed actions would occur on matrix lands and meets the requirements outlined in the Final Supplemental Environmental Impact Statement (FSEIS) of the Northwest Forest Plan which was consulted with the U.S. Fish and Wildlife Service (USFW). One hundred acre activity centers have been designated late successional reserve (LSR), and would not be entered. These activity centers and the riparian reserves were designed to mitigate timber harvest effects by providing for well distributed patches of late-successional forest that serve for dispersal of mobile species such as the northern spotted owl.

The proposed action would occur entirely within matrix lands and dispersal habitat would be maintained by spotted owl activity centers and riparian reserves. A seasonal restriction from March 1 through September 30 would be in affect for all activities within ¼ mile of known sites, or until the sites have been surveyed and non-nesting has been determined.

PEREGRINE FALCON

An active peregrine falcon site is located on private lands near the proposed project area. The site is monitored. One proposed unit is approximately 3/4 mile from the nest location, but outside the ½ mile protected core area. Management guidelines are to minimize disturbance between January 1 and July 15 in the area outside the core within 1 mile of the site (RMP ROD pg.7). 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 and will be monitored for a five year period.

LYNX

Surveys for lynx are not required in the Medford BLM district based on low elevation, low average snow depths, and lack of historic sightings (Survey protocol for the LYNX, April 1998)

NWFP RECORD OF DECISION (ROD) SURVEY AND MANAGE SPECIES

The WAU is outside the range of Del Norte and Siskiyou salamanders, and surveys are not required.

Surveys for red tree voles (survey strategy 2) were done to current interagency protocol in all proposed timber harvest units. Surveys were completed in August, 1998. No red tree vole nests found were found. Other red tree vole project surveys by BLM and Rogue River National Forest in the vicinity have not detected any red tree voles, and the area has subsequently been determined to be outside the range of the red tree vole (Survey Protocol for the Red Tree Vole, version 2.0).

Surveys of suitable great gray owl habitat (6 visits per year for 2 years) were done in 1997 and completed on June 30, 1998, according to current interagency protocol. Great gray owls are a protection buffer species. Two great gray owl nests were located on BLM land. These nest sites are protected with a ¼ mile buffer (ROD C-21). A nest was located on private land over ½ mile from a proposed prescribed burn unit. Detections in two other locations near timber sale units were made, but subsequent daytime visits could not locate any great gray owls. These areas were revisited in 1999 and 2000. No nests were found. Known nest sites will be monitored.

Mollusk surveys were begun in 1998 and completed in the spring of 2000, using current interagency draft protocol for mollusks, version 2.0. Mollusks are strategy 1 and 2 in the NWFP ROD.

Two papillose tail droppers (*Prophysaon dubium)* were located. Neither of these occur within a proposed unit.

Blue gray droppers (*Prophysaon coeruleum)* were the only survey and manage mollusks found within any proposed unit. They were locally common in the area, occurring sometimes in clusters and sometimes scattered throughout a proposed project area. Guidelines were developed

to protect known sites and “hot spots” according to current “Management Recommendations for Terrestrial Mollusk Species, Version 2.0, under BLM Instruction Memorandum No. OR-2000-015" using the following strategies:

Blue Gray Tail Dropper Management Strategy

Proposed treatment	Protection buffer	Justification
≥ 60% canopy retention/ commercial thin select cut.	No-cut 25' radius around perimeter of population; protect “hot spots”	Blue gray taildroppers have been found in areas with less than 60% canopy. 50' buffer would protect the site and canopy would be maintained through the stand.
40-60% canopy retention	No cut 50' radius around perimeter of population; protect “hot spots”	Protection of a 100' area. Suitable conditions may be achieved with canopy closure from 50-70% (allowing ± 10% fluctuations)
Regeneration harvest (north and east slope)	1 site potential tree (170') radius	North and east aspects are cooler and moister, and this would be expected to protect the site.
Regeneration harvest (south and west aspect slopes)	2 site potential tree (340') radius	South aspects are hotter and drier and the larger buffer would be expected to protect the site. Buffer is approx. 10 acres

SENSITIVE SPECIES (USFW CANDIDATE & STATE SENSITIVE)

A table listing special status and terrestrial species which could occur in the Butte Falls Resource area is attached. The table shows status, whether the proposed actions are within the range, presence or absence, gross habitat availability, and the level of survey in the watershed.

Goshawk surveys were done in 1997 and 1998 with no nests located. Surveys in some areas where goshawks were heard or seen, were repeated in 1999, again with no nests located and no center of activity identified. A proposal to list the northern goshawk as a threatened species was considered by USFW in 1999. The final decision was that there was insufficient information to warrant listing at this time. The species remains a species of concern.

Flammulated owl have been reported in the Salt Creek Area. Surveys were done in 1996 in the watershed. No Flammulated owls were detected. Flammulated owl habitat is a mosaic of open forests containing mature or old-growth ponderosa pine mixed with other tree species.

Little inventory data is available on snag and cavity nester populations. More information is needed. Among the species on the USFW and Oregon State Sensitive Species list which could be present, 16 are cavity dependent or make use of available cavities. Acorn woodpecker, Lewis’ woodpecker, pileated woodpecker, western bluebird, western gray squirrel have all been observed

in the watershed. In any proposed action alternative, all large snags would be retained which did not need to be felled for human safety reasons. Snags which need to be felled would be left in place to provide coarse wood.

OTHER WILDLIFE

Deer, elk, bear, and cougar are present in the watershed. Most of the Salt Creek/Wasson Canyon area has been designated in the Medford District RMP as "Big Game Winter Range and Elk Management Area". RMP guidelines in designated winter range are to maintain at least 20% of the Management Area in thermal cover and observe a seasonal restriction to avoid disturbance from November 15 to April 1. This includes closing all roads except major collectors and arterial during the seasonal restriction and minimizing new road construction. However, due to high public use of roads in the area, requirements to provide access to adjacent private lands, vandalism to gates and road barricades, and disregard of road closures by some people, this cannot always be achieved.

Thermal cover is a forest stand with tree height average at least 40 ft. and canopy cover at least 70%. Closed sapling pole stands will meet this criteria. Although the mild winters in the Rogue Valley make thermal cover less critical than in areas with heavy snowfall and extreme low temperatures, over 3000 acres of habitat has been identified in the watershed to meet thermal cover for deer and elk in the Big Game Winter Range and Elk Management Area.

Wild turkey are present in the watershed. Maintaining oak-savannah woodlands and large roost trees near the meadows would help maintain these populations. Quail and grouse are common in the area.

Neotropical migrants are present in the area during spring, summer, and fall. A road survey route was conducted along the Salt Creek road in the spring of 1995, 1996, and 1997 to develop a list of bird species in the watershed. Information about population numbers and habitat use are not well documented.

Mist net bat surveys were done in the watershed at three pump chances (fire control reservoir ponds). Bat species found to be present in the watershed are *Myotis volans, M. californicus, M. evotis, Corynorhinos (Plecotis) townsendii, Antrozous pallidus, Eptesicus fuscus,* and *Lasionycterus noctivagans*. There are no known caves, mines, or abandoned wooden bridges in the project area.

SPECIAL OR UNIQUE HABITATS

Oregon white oak woodlands provide habitat for many wildlife species. Over 100 species of wildlife, including amphibians, reptiles, birds and mammals use Oregon white oak habitats for nesting, feeding, or resting. The absence of fire has caused much of the oak woodlands and oak/pine savanna to decline due to over-dense conditions and the encroachment of conifers. Fire

reduces leaf litter buildup on the forest floor and prepares a mineral seed bed, providing favorable conditions for acorn germination. Fire also thins oaks and opens the oak woodland canopy. Open form oak tend to provide more cavities than closed form oak. These cavities are important to a variety of wildlife species, including bluebirds, Lewis' woodpecker, pygmy owls, gray squirrels, bats, and many other species.

Quality of shrub (primarily wedgeleaf and manzanita) habitat has declined due to fire suppression. Dense stands of manzanita create barriers to large game movement. Generally, fire is the primary agent for creating and maintaining early seral stages of shrub and grass plant communities. In the absence of fire, much of this habitat type has matured and is becoming decadent, with more tough woody material and less tender, palatable new growth. Therefore, the nutritional value of the grass and shrubs that is important for deer and elk winter range is decreasing (Little Butte Creek watershed analysis, pg 85).

The quantity and quality of grass/forb/herbaceous habitat through the watershed has declined due to the invasion of non-native grasses and forbs and encroachment of shrubs and conifers into the grasslands. Encroachment has primarily been the result of fire exclusion over the past century. Non-native plants, primarily star thistle, in the lower elevations have reduced native forbs and grasses. Most of the introduced species are not palatable to wildlife. This has reduced the amount of forage available.

ENVIRONMENTAL CONSEQUENCES

EFFECTS OF ALTERNATIVE 1--NO ACTION

Threatened and Endangered Species

The no action alternative would have "no effect" on the northern spotted owl, and habitat acres would remain close to current levels. Openings in the canopy would continue to increase due to heavy mistletoe mortality that is occurring in the Wasson Canyon area. This is currently occurring in section 7 and 35, where loss of overstory canopy is increasing. However, for the most part, the patches are small gaps scattered throughout mature timber. With no action, associated mechanical noise and disturbance would not occur.

Other Wildlife

Current trends form wildlife habitat and wildlife populations would continue with no action in the watershed. Skid trails would not be built and current levels of habitat would remain to develop naturally. Coarse woody debris and snag numbers would increase due to the mistletoe mortality in the large Douglas fir trees within the heavy mistletoe infested stands. This would benefit species which depend on these habitat features. Openings within these stands would increase as the trees die and fall to the ground.

Without prescribed fire, current trends in the meadows and oak woodlands/shrublands would continue. In areas of dense, mature wedgeleaf, tough woody parts of the plants would continue to develop and available wildlife forage would continue to decline. As the wedgeleaf becomes thicker and more impenetrable, a reduction in usable cover would occur. Open grasslands would not have the flush of nutrients which would occur as a result of prescribed fire. Conifers would continue to encroach into the oak woodlands, and white oak woodlands would be expected to continue to decline.

Chances of a large, catastrophic wildfire which could cause the loss of large areas of late successional habitat would continue at current levels and wildfire risk would increase in some areas if prescribed fire to reduce fuel hazard does not occur.

SHORT TERM USES VS LONG TERM PRODUCTIVITY

Timber harvest would not cause loss of habitat for late successional dependent species. There would be an expected long term increase in productivity for the late successional species outside the areas of high mistletoe mortality. Mistletoe provides nesting, resting and hiding cover for many species of wildlife, including spotted owls, squirrels, pine martins, fishers, other birds, etc. These species would be expected to benefit from the mistletoe in the areas where heavy mortality is not occurring.

In the areas of high mistletoe mortality, there would be an expected increase in the number of large snags and future coarse woody debris and would benefit woodpeckers, other cavity dependent species and the species which depend upon coarse woody debris. Loss of the large overstory Douglas fir trees due to mistletoe mortality could reduce the suitability in the connectivity block and in section 7 for wildlife which depend on the high canopy, older forests. This has already been observed in some of the stands in these sections. There are gaps in the canopy developing as a result of loss of the overstory in the areas of heavy mistletoe infestation and mortality.

IRREVERSIBLE/ IRRETRIEVABLE COMMITMENT OF RESOURCES

None identified

CUMULATIVE EFFECTS

No change expected from current trends within the watershed.

EFFECTS OF ALTERNATIVE 2–Forest Health–High mistletoe regeneration harvest

Threatened and Endangered Species

Approximately 1864 acres of matrix land would be treated. Areas which would be treated for

density management, leaving ≥ 40% canopy, and mortality salvage would be expected to remain spotted owl dispersal habitat.

Alterative 2 would reduce suitable spotted owl habitat (nesting, roosting, foraging, dispersal) to the greatest amount of the three action proposals. This alternative would likely adversely affect the northern spotted owl. Consultation with USFW has been completed and the action meets the NWFP guidelines. A 1/4 mile seasonal restriction would be in place to reduce noise and activity disturbance for the spotted owl and great gray owl nests if they are active. Acres reserved in the connectivity block to provide late successional habitat would not be entered. Within the section, outside the reserved acres, thirteen acres of owl habitat would be removed in the connectivity block and 242 acres would be entered for mortality salvage.

Other Wildlife

This alternative would have the greatest loss of future snags and coarse woody debris due to the higher number of acres which would be regeneration harvested. Minimum ROD standards and guidelines would be met.

Cover and nesting substrate for some land birds would also be removed through this proposed action. Buffers for the survey and manage species, mollusks, fungi, lichens, and plants would help preserve small patches of habitat which could be used for hiding cover and nesting birds. The proposed action, while affecting local individuals and causing the loss of habitat, and possibly disrupting the nesting cycle in the year the action occurred, would not have significant effects to the populations of land birds.

Prescribed fire would be expected to improve conditions in the meadows and wedgeleaf patches. Open grasslands would have a flush of nutrients as a result of prescribed fire. Conifer encroachment would be reduced in the areas where fire intensity would kill the small Douglas fir and pines. Loss of thermal cover would occur. However, acreage has been identified and deferred at this time as recommended in the RMP to provide thermal cover within the watershed.

Prescribed fire in late spring could result in the loss of some land bird nests. Most prescribed fire occurs when conditions are quite wet, mostly early in the spring before nesting is established, although some early nests could be burned and birds displaced. This could cause the loss of the breeding opportunity for that year. 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.

SHORT TERM USES VS. LONG TERM PRODUCTIVITY

Timber harvest would create loss of habitat for late successional dependent species. These species would not be expected to recover until late successional conditions re-occur, perhaps 80-100 years.

There would be an expected reduction of forage for grazing and shrub browsers in the short term due to fire disturbance before grasses and shrubs put out new growth. However, this is would improve within one year, when nutritious re-growth would be expected. Cover would be reduced in the wedgeleaf areas as a result of the crushing action.

In the areas of high mistletoe mortality harvest, there would be an expected decrease in the number of large snags and future coarse woody debris. Currently a large pulse of coarse wood is occurring in section 35 and 7 due to the heavy mistletoe infestation. This would be reduced because the proposed mortality salvage would remove the majority of the large overstory trees which are currently heavily infested with mistletoe and will likely die within the next 5 - 10 years.

IRREVERSIBLE/ IRRETRIEVABLE COMMITMENT OF RESOURCES

None identified

CUMULATIVE EFFECTS

The proposed harvest would occur entirely within matrix lands, and the harvest meets minimum ROD standards and guidelines for timber harvest on federal lands.

The greatest loss of late successional habitat would occur as a result of the proposed timber harvest in alternative 2. In T35S, R2E, section 35, adjacent clearcuts would leave only the spotted owl activity center and riparian reserves to provide late successional habitat in the section. Adjacent BLM lands have pole stands which would not provide late successional habitat. This would reduce the suitability of the area for wildlife which depend on the high canopy, older forests.

Most adjacent private timberlands have been harvested and are either shrub, pole, or large pole conditions. Little mature timber on private lands remains in the area. Due to the high amounts of early seral forest on adjoining private lands, as well as past harvest practices on BLM lands, and proposed regeneration units in this alternative, there would be small islands of late successional habitat in the landscape provided by the spotted owl activity centers, deer and elk thermal cover units, and riparian buffers.

EFFECTS OF ALTERNATIVE 3–Canopy retention–no regeneration harvest in transient snow zone

Threatened and Endangered Species

Approximately1642 acres of matrix land would be treated. Areas which would be treated for density management, leaving $\geq$ 40% canopy, and mortality salvage would be expected to remain spotted owl dispersal habitat.

This alternative would likely adversely affect the northern spotted owl. One hundred twenty two acres of spotted owl nesting habitat and 49 acres of dispersal habitat would be removed in this alternative. Two hundred ten acres of nesting habitat would be reduced to from nesting, roosting, foraging to roosting, foraging habitat. Alterative 3 would protect more of the available spotted owl habitat of the three proposed action alternatives due to the lowest number of regeneration acres. A 1/4 mile seasonal restriction would be in place to reduce noise and activity disturbance for the spotted owls and great gray owl nest if they are active.

Other Wildlife

Future coarse woody debris and snag numbers would decrease below what is currently occurring due to proposed mortality salvage and timber harvest. However, of the three proposed action alternatives, this alternative would leave the greatest amount of snags and future coarse woody debris. This is due to the higher amounts of mistletoe infested trees with high mistletoe ratings which would be left in the forest within the transient snow zones. Minimum ROD standards and guidelines would be exceeded.

Deer and elk forage would improve due to prescribed fire in the meadows and wedgeleaf patches. Open grasslands would have a flush of nutrients as a result of prescribed fire. Conifer encroachment in the oak woodlands and oak savannah would be reduced in the areas where fire intensity would kill the small conifers. Loss of thermal cover would occur. However, acreage has been deferred from harvest at this time to provide thermal cover within the watershed and meet RMP standards.

Cover and nesting substrate for some land birds would also be removed through this proposed action. Buffers for the survey and manage species, mollusks, fungi, lichens, and plants would help preserve small patches of habitat which could be used for hiding cover and nesting birds. The proposed action, while affecting local individuals and causing the loss of habitat, and possibly disrupting the nesting cycle in the year the action occurred, would not have significant effects to the populations of land birds.

Prescribed fire would be expected to improve conditions in the meadows and wedgeleaf patches. Open grasslands would have a flush of nutrients as a result of prescribed fire. Conifer encroachment would be reduced in the areas where fire intensity would kill the small Douglas fir and pines. Loss of thermal cover would occur. However, acreage has been identified and deferred at this time as recommended in the RMP to provide thermal cover within the watershed.

Prescribed fire in late spring could result in the loss of some land bird nests. Most prescribed fire occurs when conditions are quite wet, mostly early in the spring before nesting is established, although some early nests could be burned and birds displaced. This could cause the loss of the breeding opportunity for that year. 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.

SHORT TERM USES VS. LONG TERM PRODUCTIVITY

In the regeneration harvest areas, loss of habitat for late successional dependent species would occur. These species would not be expected to recover until late successional conditions re-occur, perhaps within 100 years. Since there would be less regeneration harvest with this proposed alternative, there would be less loss of late successional habitat than proposed alternatives 2 and 4.

As in alternative 2, there would be an expected reduction of forage in the short term due to fire disturbance before grasses and shrubs put out new growth. However, this is would improve within one year, when nutritious growth would be expected. Cover would be reduced in the wedgeleaf areas as a result of the crushing action.

IRREVERSIBLE/ IRRETRIEVABLE COMMITMENT OF RESOURCES

None identified

CUMULATIVE EFFECTS

No acres are proposed for regeneration harvest in the connectivity block.

Loss of habitat would occur as a result of the timber harvest. This would reduce the suitability of the area for wildlife which depend on the high canopy, older forests. However due to the proposal to leave all areas within the transient snow zone to meet the average transient snow zone canopy cover of 70%, this alternative would protect more late successional habitat for wildlife which depend upon the late successional habitat. In section 35 and other transient snow zone areas, suitable spotted owl habitat adjacent to the owl activity center would not be removed by regeneration harvest and would continue to provide patches with intact cover. However, high mistletoe in the large overstory trees is causing mortality and deformed crowns which do not provide high canopy cover in the overstory. This area would continue to provide some foraging and roosting habitat. Adjacent private lands would not provide late successional habitat.

EFFECTS OF ALTERNATIVE 4–Landscape treatment

Approximately 1901acres of matrix land would be treated. Areas which would be treated for density management, leaving $\geq$ 40% canopy, and mortality salvage would be expected to remain spotted owl dispersal habitat.

Threatened and Endangered Species

Alterative 4 would protect more spotted owl habitat than alternative 2, but less than alternative 3. This alternative would likely adversely affect the northern spotted owl. Consultation with USFW

has been completed and the action meets the NWFP guidelines. A 1/4 mile seasonal restriction would be in place to reduce noise and activity disturbance for the spotted owls and great gray owl nest if they are active.

Other Wildlife

Future coarse woody debris and snag numbers would decrease below what is currently occurring due to proposed mortality salvage and timber harvest. Small openings (up to 2 acres) would be created within some of the transient snow zones to remove heavy mistletoe infestations, but protect the majority of the canopy within the stand. This proposal would leave more potential future snags and coarse woody debris than alternative 2, but less than alternative 3. This is due to the higher amounts of mistletoe which would be left in the forest in the transient snow zones. Minimum ROD standards and guidelines would be exceeded.

Deer and elk forage would improve due to prescribed fire in the meadows and wedgeleaf patches. More cover would remain in the mistletoe infested stands than in alternative 2. Small openings within the stand would benefit deer and elk by providing openings where new shrubs and plant growth would occur, while providing quality adjacent hiding cover.

Open grasslands would have a flush of nutrients as a result of prescribed fire. Conifer encroachment would be reduced in the areas where fire intensity would kill the small conifers. Loss of thermal cover would occur. However, the thermal cover acres that have been deferred from harvest at this time will cover within the watershed and meet RMP.

Cover and nesting substrate for some land birds would also be removed through this proposed action. Buffers for the survey and manage species, mollusks, fungi, lichens, and plants would help preserve small patches of habitat which could be used for hiding cover and nesting birds. The proposed action, while affecting local individuals and causing the loss of habitat, and possibly disrupting the nesting cycle in the year the action occurred, would not have significant effects to the populations of land birds.

Prescribed fire would be expected to improve conditions in the meadows and wedgeleaf patches. Open grasslands would have a flush of nutrients as a result of prescribed fire. Conifer encroachment would be reduced in the areas where fire intensity would kill the small Douglas fir and pines. Loss of thermal cover would occur. However, acreage has been identified and deferred at this time as recommended in the RMP to provide thermal cover within the watershed.

Prescribed fire in late spring could result in the loss of some land bird nests. Most prescribed fire occurs when conditions are quite wet, mostly early in the spring before nesting is established, although some early nests could be burned and birds displaced. This could cause the loss of the breeding opportunity for that year. 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.

SHORT TERM USES VS. LONG TERM PRODUCTIVITY

In the regeneration harvest areas, loss of habitat for late successional dependent species would occur. These species would not be expected to recover until late successional conditions re-occur, perhaps within 100 years. There would be less regeneration harvest than alternative 2, but more than alternative 3. Some loss of productivity is expected due to the high amounts of mistletoe infestation which would be left to meet the canopy requirements . This would benefit species which use the mistletoe for nesting, resting, and foraging, but when the trees die, would then reduce the quality of the habitat in the long term. Some areas with lower mistletoe mortality would create habitat for wildlife using this type of structure, but the heavy mortality that is currently occurring in section 7 and 35 would in the long term, decrease quality of habitat for late successional dependent species.

As in alternative 2 and 3, there would be an expected reduction of forage in the short term due to fire disturbance before grasses and shrubs put out new growth. However, this is would improve within one year, when nutritious growth would be expected. Cover would be reduced in the wedgeleaf areas as a result of the crushing action.

Cover and nesting substrate for some land birds would also be removed through this proposed action. Buffers for the survey and manage species, mollusks, fungi, lichens, and plants would help preserve small patches of habitat which could be used for hiding cover and nesting birds. The proposed action, while affecting local individuals and causing the loss of habitat, and possibly disrupting the nesting cycle in the year the action occurred, would not have significant effects to the populations of land birds in the area.

Prescribed fire would be expected to improve conditions in the meadows and wedgeleaf patches. Open grasslands would have a flush of nutrients as a result of prescribed fire. Conifer encroachment would be reduced in the areas where fire intensity would kill the small Douglas fir and pines. Loss of thermal cover would occur. However, acreage has been identified and deferred at this time as recommended in the RMP to provide thermal cover within the watershed.

Prescribed fire in late spring could result in the loss of some land bird nests. Most prescribed fire occurs when conditions are quite wet, mostly early in the spring before nesting is established, although some early nests could be burned and birds displaced. This could cause the loss of the breeding opportunity for that year. 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 to occur.

IRREVERSIBLE/ IRRETRIEVABLE COMMITMENT OF RESOURCES

None identified

CUMULATIVE EFFECTS

Thirteen acres are proposed for pine tree release type harvest in the connectivity block.

Loss of habitat would occur as a result of the timber harvest. This would reduce the suitability of the area for wildlife which depend on the high canopy, older forests. However, this is partly mitigated with small openings within the transient snow zone areas which would still leave intact surrounding forests which would provide canopy cover. This alternative would protect more late successional habitat for wildlife which depend upon the late successional habitat than alternative 2, but less than alternative 3.

Due to the high amount of harvesting on adjoining private timberlands, there is little mature forest on private lands adjacent to the proposed units. Total acres of spotted owl habitat within the watershed would continue to decline. Spotted owl activity centers would be expected to provide nesting, roosting, foraging, and dispersal habitat. Riparian buffers and lands set aside to provide big game thermal cover would provide the future old growth connectivity between the watersheds.

PROJECT DESIGN FEATURES

Seasonal restriction March 1- September 30 within ¼ mile of known spotted owl sites.

Buffer meadows within great gray owl habitat with a 300 foot no cut buffer.

Protect known great gray owl nests with 1/4 mile buffer

Maintain the no action core area within ½ mile of peregrine falcon nest site. Avoid disturbance February 1- August 15 within the outer zone up to 1 mile.

Close skid roads after action is completed.

Seasonal restriction and road closure in designated Big Game Winter Range from November 15 to April 1 (where feasible).

Meet ROD requirements for CWD (120 linear ft 16' X 16" min) and snags (1.8 snags/acre).

Protect known blue gray tail dropper sites with a no-cut protection buffer:
25' radius in areas where 70% canopy would be retained
50' radius in areas where 40% canopy would be retained
Site potential tree length on north facing regeneration harvest areas
2 site potential tree length on south facing regeneration harvest areas

BUTTE FALLS RESOURCE AREA
2000 SPECIAL STATUS SPECIES OCCURRENCE

PROJECT NAME __Bieber Wasson_____

U.S.F.W./OREGON T&E SPECIES					
SPECIES	STATUS	RANGE (Y/N)	P/A	HABITAT QUALITY	LEVEL OF SURVEY
Bald eagle	FT, ST, 1	Y	P	Medium	Incidental
Northern spotted owl	FT, ST, 1	Y	P	Medium	Thorough
Peregrine falcon	SE,BS,1	Y	P	Medium	Thorough
Vernal Pool Fairy Shrimp	FT,1	N	A	Absent	None

STATE, BLM, ONHP, SPECIES of CONCERN					
SPECIES	STATUS	RANGE (Y/N)	P/A	HABITAT QUALITY	LEVEL OF SURVEY
Cascade frog	SV, BT, 3	Y	A	Low	Limited
Clouded salamander	SU, BT, 3	Y	U	Medium	None
Foothill yellow legged frog	SV, BT, 3	Y	U	Medium	None
No. red legged frog	SU, BT, 3	N	A	Low	None
Tailed Frog	SV, BT,3	N	U	Low	None
Western pond turtle	SC, BS, 2	Y	S	Low	Limited
Western toad	SV, BT, 3	Y	U	Low	None
California mt. Kingsnake	SV, BT, 3	Y	S	Low	None
Common kingsnake	SV, BT, 3	Y	S	Low	None
Sharptail snake	SV, BT, 4	Y	S	Low	None
Acorn woodpecker	BT, 3	Y	P	Low	Limited
Bank swallow	SU, BT, 4	Y	U	Low	None
Black-backed woodpecker	SC, BS, 4	U	U	Medium	None
Blue-gray gnatcatcher	BT, 3	Y	P	Medium	Limited
Great gray owl	SV, BT, SM, 4	Y	P	Medium	Thorough
Greater sandhill crane	SV, BT, 4	N	A	Low	None

SPECIES	STATUS	RANGE (Y/N)	P/A	HABITAT QUALITY	LEVEL OF SURVEY
Lewis' woodpecker	SC, BS, 3	Y	P	Low	Incidental
Northern goshawk	SC, BS, 3	Y	Y	Medium	Thorough
Olive-sided flycatcher	SV, BT, 3	Y	S	Medium	Limited
Pileated woodpecker	SV, BT, 4	Y	P	Medium	Incidental
Three-toed woodpecker	SC, BS, 4	N	A	Low	None
Tri-colored blackbird	SP, BA, 2	N	A	Low	None
Western Bluebird	SV, BT, 4	Y	P	Medium	Limited
White headed woodpecker	SC, BS, 3	N	A	Low	None
White tailed kite	BT, 3	N	A	Low	None
American martin	SV, BT, 3	Y	S	Low	None
Fisher	SC, BS, 2	Y	U	Low	None
Fringed myotis	SV, BT, 3	Y	U	Medium	Limited
Long eared myotis	SU, BT, 3	Y	P	Medium	Limited
Long legged myotis	SU, BT, 3	Y	P	Medium	Limited
Pallid bat	SV, BT, 3	Y	P	Medium	Limited
Red tree vole	SM	N	A	High	Thorough
Ringtail	SU, BT, 3	Y	U	Low	None
Silver haired bat	SU, BT, 3	Y	P	Low	Limited
Townsend's big eared bat	SC, BS, 2	Y	P	Low	Limited
Yuma myotis	BT, 4	Y	U	Low	Limited
Western gray squirrel	SU, BT, 3	Y	P	High	Incidental
Oregon Shoulderband	BS, SM, 1	U	U	Low	Thorough
Oregon Megomphix	BS, SM, 1	U	U	Low	Thorough
Crater Lake tightcoil	BS, SM, 1	U	U	Low	Thorough
Blue-grey tail-dropper	BT, SM, 2	Y	P	High	Thorough
Papillose tail-dropper	BA, SM, 2	Y	P	Medium	Thorough
Burnell's False Water Penny Beetle	BT, 4	U	U	Low	None
Denning's Agapetus caddisfly	BT, 3	U	U	Low	None

SPECIES	STATUS	RANGE (Y/N)	P/A	HABITAT QUALITY	LEVEL OF SURVEY
Green springs Mt. faurlan caddisfly	BT, 3	U	U	Low	None
Schuh's homoplectran caddisfly	BT, 3	U	U	Low	None
Siskiyou caddisfly	BT, 3	U	U	Low	None
Siskiyou chloealtis grasshopper	BT, 3	U	U	Low	None
Mardon skipper butterfly	FC, 2	U	U	Low	None
Franklin's bumblebee	BS, 1	U	U	Low	None

Status:
FE - USFW Endangered - in danger of extinction throughout a significant portion of its range
FT - USFW Threatened - likely to become endangered species within the foreseeable future
FC - USFW Candidate - proposed and being reviewed for listing as threatened or endangered
SE - State Endangered - in danger of extinction in the state of Oregon
ST - State Threatened - listed as likely to become endangered by the state of Oregon
SC - State Critical - listing is pending, or appropriate, if immediate conservation action not taken
SV - State Vulnerable - listing not imminent, and can be avoided through continued or expanded use of adequate protective measures and monitoring
SP - State Peripheral or naturally rare - populations at the edge of their geographic range, or historically low numbers due to limiting factors
SU - State Unknown - status unclear, insufficient information to document decline or vulnerability
SM - Survey & Manage - Forest plan ROD directs protection of known sites and/or survey for new sites
BS - Bureau Sensitive (BLM) - eligible for addition to Federal Notice of Review, and known in advance of official publication. Generally these species are restricted in range and have natural or human caused threats to their survival.
BA - Bureau Assessment Species (BLM) - not presently eligible for official federal or state status, but of concern which may at a minimum need protection or mitigation in BLM activities.
BT - Bureau tracking (BLM) - not considered as a special status species for management purposes. Tracking will enable early warning for species which may become of concern in the future. Districts are encouraged to collect occurrence data on species for which more information is needed to determine status.

1 - Oregon Natural Heritage Rank, threatened with extinction throughout its range
2 - Oregon Natural Heritage Rank, threatened with extinction in the state of Oregon
3 - Oregon Natural Heritage Rank, more information is needed before status can be determined, but may be threatened or endangered in Oregon or throughout range
4 - Oregon Natural Heritage Rank, of conservation concern. May be rare, but are currently secure. May be declining in numbers or habitat but still too common to be considered as threatened or endangered. May need monitoring.

P/A Presence:
P - Present
S - Suspected

Habitat quality:
H - High
M - Medium

U - Uncertain
A - Absent
T - Possibly transitory

L - Low
A - Absent

SPECIAL STATUS WILDLIFE SPECIES--1998
HABITAT AND OCCURRENCE IN THE BUTTE FALLS RESOURCE AREA

Acorn woodpecker (*Melanerpes formicivorus*)
Habitat is oak woodlands or pine forests where oak trees are abundant.

American martin (*Martes americana*)
Martin inhabit mature and old growth forests that contain large quantities of standing and downed snags and other coarse downed woody material, often near streams. They often use down logs for hunting and resting. They feed on small mammals, birds, fruits, and insects.

Bald eagle (*Haliaeetus leucocephalus*)
Six nest sites are known in the Medford BLM district, with 2 on adjoining private lands. Four of these are within the Butte Falls Resource area. In Oregon, the majority of nests (84%) are located within one mile of lakes, reservoirs, large rivers, and coast estuaries. Nest trees are larger, dominant or co-dominant trees in the stand and are usually components of old growth or older second growth forests. Prey is fish, waterfowl, small mammals (rabbits, etc.), and carrion.

Bank swallow (*Riparia riparia)*
Nests communally in borrows in sand banks and road cuts and forage near nest colony. Bank swallows usually live near water, fields, marshes, lakes, and streams.

Black-backed woodpecker (*Picoides arcticus*)
Presence is undetermined in the Medford BLM district. Has been documented in Cascade Mountains in Jackson County and in the Siskiyou Mountains in Josephine County. In Oregon, the black-backed woodpecker tends to occur in lower elevation forests of lodgepole pine, ponderosa pine, or mixed pine/conifer forests. Dead trees used for foraging have generally been dead three years or less.

Blue-gray gnatcatcher *(Polioptila caerulea)*
Habitat is open deciduous woodland, oaks, pine thickets, and chaparral. Jackson County is near the northern extent of the range.

Blue-grey tail-dropper (*Prophysaon coeruleum*)
Found in open to moist conifer and mixed conifer forests at elevations (500-3000 ft.). In open or dry areas, it is usually located in sites with relatively higher shade and moisture levels than those of the general forest habitat. It is usually associated with partially decayed logs, leaf and needle litter (especially hardwood leaf litter), mosses and moist plant communities such as bigleaf maple and sword fern associations.

Burnell's false water penny beetle (Acneus burnelli)
This species has not been found in the Medford BLM district, but could be present. Adults are found along small, rapid, low elevation streams, frequently near waterfalls. Larvae were found in rapid sections of a stream in pools of quiet water protected form any current by large boulders. This species has been found in Coos Co., Upper Middle Creek, 15 miles SW of Powers, OR.

California mountain kingsnake (*Lampropeltis zonata*)
Habitat includes oak and pine forests. Found under or inside rotting logs and in talus areas. They are not common, and are mostly found in the western part of the District.

Cascade frog (*Rana cascade*)
Found in the Cascade mountains, above 2600 feet, on the east side of the District. They are

most commonly found in small pools adjacent to streams flowing through meadows. They are also found in small lakes, bogs, and marshy areas that remain damp thorough the summer.

Clouded salamander (*Aneides ferreus*)

Habitat requirements are forest and forest edges from sea level to 1500 meters. There is a correlation between clouded salamander abundance and large conifers as well as down woody material. They occur mainly under loose bark in decayed, standing and fallen snags, and stumps. They have been found as high as 20 feet in trees. May also be found in cracks in cliff rocks, under moss and leaf litter.

Common kingsnake (*Lampropeltis getulus*)

In Oregon, they are found only in Douglas, Jackson, and Josephine Counties in the more mesic river valleys. Common kingsnake inhabit oak/pine woodlands, open brushy areas, and river valleys, often along streams, and in thick vegetation. They may also be found in farmlands, especially near water areas.

Crater Lake tightcoil (*Pristiloma arcticum crateris*)

Species is known from south of Crater Lake, Klamath County and an occurrence in Jefferson County. Species may be found in moist conifer forests and among mosses and other vegetation near wet lands, springs, seeps and riparian areas above 2000 ft. elevation.

Denning's agapetus caddisfly (Agapetus denningi)

This species has not been found in Medford BLM district, but could be present. No habitat information is available. The only information available is from the life history of A. taho, a similar species, which is found in cool, mid to large size streams of moderate gradient in forested areas over a large elevation range. A single specimen was collected in Rogue River National Forest.

Fisher (*Martes pennanti pacifica*)

Habitat is mature and old growth forests. They appear to be closely associated with riparian areas in these forests. In a study done in Trinity County, California, a preference was shown for conifer forests with some hardwoods present. They seem to prefer 40-70% canopy cover. They mainly use large living trees, snags and fallen logs for denning. Occasional sightings on the Medford district, but little information is available as to distribution and density.

Flammulated owl (*Otus flammeolus*)

Habitat is a mosaic of open forests containing mature or old-growth ponderosa pine mixed with other tree species. In California, habitat included conifer and black oak. Nests mainly have been located in abandoned Northern flicker or pileated woodpecker cavities. The presence of dense conifers for roosting may be a necessary habitat components. Feeds mostly on insects. May also eat other arthropods and small vertebrates.

Foothill yellow legged frog (*Rana Boylii*)

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.

Franklin's bumblebee (*Bombus franklini*)

Franklin's bumblebee has been found in herbaceous grasslands between 1400-4000 ft. elevation. Activity spans the entire blooming season, so they do not appear restricted to a particular host or flower. Adults probably present and in active flight from May (on warm sunny days) through early September. Range restricted to southwestern Jackson County, Oregon, perhaps southeastern corner of Josephine Co., perhaps part of northern California.

Fringed myotis bat (*Myotis thysanodes*)

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*)

Habitat preference is open forest or forest with adjoining deep-soil meadows. Nest in broken top trees, abandoned raptor nests, mistletoe clumps, and other platforms created by whorls of branches. Majority of nests in one study were in over-mature or remnant stands of Douglas fir and grand fir forest types on north facing slopes. Probably found in low densities across the district.

Greater sandhill crane (*Grus canadensis tabida*)

A spring and summer resident of Oregon, sandhill cranes roost, nest, and rear young in wet meadows, including wild, irrigated hay meadows and shallow marshes. The cranes may use agricultural crop lands for feeding during non-nesting season. Sandhill cranes have been observed on the Ashland Resource Area near Howard Prairie and Hyatt Lake and in the Butte Falls Resource area near the communities of Prospect and Butte Falls.

Green springs Mt. farulan caddisfly (*Farula davisi*)

Species of Farula inhabit cool, highly humid areas. This species was collected near a small stream with a marshy area nearby. One is probably the habitat. Two adult specimens were collected from Green Springs Mt., 10 miles east of Ashland near a large stream.

Lewis' woodpecker (*Melanerpes lewis*)

These woodpeckers breed sparingly in the foothill areas of the Rogue and Umpqua river valleys in Douglas, Jackson, and Josephine counties. Habitat preference is hardwood oak stands with scattered pine near grassland shrub communities. Breeding areas in the Rogue valley are uncertain. In some locales, the woodpeckers breed in riparian areas having large cottonwoods and in oak conifer woodlands. 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*)

A crevice dweller 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 an open forest dweller which is found in small pockets and crevices in rock ledges, caves, and buildings. When in caves, they hang in clumps in deep twilight zones.

Mardon skipper butterfly (*Polites mardon*)

Only known in four localities, two in Washington state, one in Del Norte County coastal mountains, and the fourth in high mountain meadows along the summit of the Cascade Mountains in Jackson and Klamath Counties. They are found in wet mountain meadow habitats.

Northern goshawk (*Accipiter gentilis*)

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.

Northern pygmy owl (*Glaucidium gnoma*)

Believed to be present across district. Population numbers and trends are unknown. Habitat needs are not clear, but the species is regularly recorded in forested areas of numerous types and age classes in Oregon, most commonly along edges of openings such as clearcuts or meadows. Nests in tree cavities excavated by woodpeckers. Feeds on insects, small vertebrates and birds.

Northern red legged frog (*Rana aurora*)

Red legged frogs prefer slack water of ponds and low gradient streams with emergent vegetation for reproduction. These frogs are found in lower elevations and can be found during the summer months up to 1000 feet from standing water in humid, old growth forests and moist meadows.

Northern saw-whet owl (*Aegolius acadicus*)

Believed to be present across the district. Population numbers and trends are unknown. Habitat is dense conifer and mixed conifer/hardwood forests. Nest in abandoned woodpecker holes and natural cavities. Feed on small mammals and birds.

Northern spotted owl (*Strix occidentalis caurina*)

Old growth coniferous forest is preferred nesting, roosting and foraging habitat, or areas with some old growth characteristics with multi-layered, closed canopies with large diameter trees with an abundance of dead and down woody material. Northern spotted owls commonly nest in cavities 50 or more feet above the ground in large decadent old growth trees. Other nest sites include large mistletoe clumps, abandoned raptor nests, and platforms formed by whorls of large branches. Over 200 northern spotted owl "core areas", 100 acres of the best habitat around activity centers for known sites (as of 1/1/94) have been designated and mapped as late successional reserves. Prey is primarily small arboreal mammals, such as flying squirrels, woodrats, voles, etc. and occasionally small birds.

Olive sided flycatcher (*Contopus borealis*)

Fairly common in coniferous forests, burns, and clearings. Often perches high on tall conifer or snag at edge of clearcut. Feeds on insects and other invertebrates, including caterpillars.

Oregon Megomphix (*Megomphix hemphilli*)

Expected to occur in moist conifer/hardwood forests up to 3000 ft. Found in hardwood leaf litter and decaying nonconiferous plant matter under bigleaf maple trees, especially if there are any rotten logs or stumps nearby. A bigleaf maple component in the tree canopy and an abundance of sword fern on forested slopes and terraces seems characteristic of the sites.

Oregon shoulderband (*Helminthoglypta hertleini*)

This species is known from rocky areas including talus deposits, but not necessarily restricted to these areas. Suspected to be found within its range wherever permanent ground cover and/or moisture is available. This may include rock fissures or large woody debris sites. Somewhat adapted to somewhat xeric conditions during a part of the year.

Pallid bat (*Antrozous pallidus*)

This bat is a crevice dweller. Rock crevices and human structures are used as day roosting sites. Recent radiotelemetry studies indicate that these bats also use interstitial spaces in the bark of large conifer trees as a roost site. One colony of pallid bats was 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.

Papillose tail-dropper (*Prophysaon dubium*)

Appears to be strongly associated with hardwood logs and leaf litter. It has been found in sites that are similar to, but somewhat more exposed than those described for *Prophysaon coeruleu, above.*

Peregrine falcon (*Falco peregrinus*)

Primary habitat is tall cliffs. Two confirmed active sites occur in the Medford district. Occasional sightings are made during the winter months, but these are thought to be migrating individuals. Forest lands provide habitat for prey species for peregrine falcons. Prey is mostly birds, especially doves and pigeons. Peregrines also prey on shorebirds, waterfowl, and passerine birds.

Pileated woodpecker (*Dryocopus pileatus*)

Pileated woodpeckers are common across the Medford BLM district. They are found mainly in old growth and mature forests, but can feed in younger forests and clearcuts. A new nest is excavated each year. They mainly use dead trees that have the strength to handle a nest cavity that averages 8 inches wide and 22 inches deep ($\geq$20 inches dbh). Pileated woodpeckers excavate an new nest each year, and need 1-2 hard snags per 100 acres. Studies show that the pileated woodpeckers need about 45 large trees with existing cavities in their home range (300-1000 acres) to provide roosting habitat.

Red tree vole (*Arborimus longicadus*)

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.

Ringtail (*Bassariscus astutus*)

Ringtails are most commonly found in areas having cliffs, rocky terrain near water, riparian hardwoods, and sometimes conifers. They nest in hollow trees, brush piles, caves, and abandoned buildings. They are encountered infrequently across the District.

Schuh's homoplectran caddisfly (*Homoplectra schuhi*)

Larvae are found in spring-seepage habitats in forested montane areas. Homoplectra sp. are found in streams with moderate to close shading from a forest canopy with most sites having a mixed deciduous- conifer canopy. The distribution of the species appears to be limited with specimens found in the Cascade and Coast range mountains of southwestern Oregon and northern California, where suitable habitat is found.

Sharptail snake (*Contia tenuis*)

Habitat is conifer forests and oak grassland edges. Found in rotting logs, moist talus, under rocks, boards, or other objects, mostly in interior valleys.

Silver-haired bat (*Lasionycteris noctivagans*)

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 caddisfly (*Tinodes siskiyou*)

Adult collection records indicate the larvae are associated with mid-size streams, with moderate to dense shading from a mixed hardwood/conifer overstory. Adults have been collected adjacent to both cool, spring-fed streams and from streams with a high annual temperature range. Members of this genus have been found from the coastal mountains of northern Calif. and from 2

disjunct populations in Oregon, one from the Squaw Lakes region of the Rogue River National Forest, 10 miles SW of Medford.

Siskiyou chloealtis grasshopper (*Chloealtis aspasma*)

This species has been found in the Siskiyou Mountains near Mt. Ashland and near Willow Lake. Appears to be associated with elderberry plants. Females lay eggs in the pith of elderberry plants.

Tailed frog (*Ascaphus truei*)

Habitat is cold, fast flowing permanent streams in forested areas. Temperature tolerance range is low, 41-61 degrees fahrenheit. Tailed frog are closely tied to water.

Three toed woodpecker (*Picoides tridactylus*)

Presence is undetermined in the Medford BLM district. Range is along the crest of the Cascade Range and eastward. Generally 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 (*Plecotus townsendii*)

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.

Trimotored blackbird (*Agelaius tricolor*)

Trimotored blackbirds are found in the interior valleys of southern Oregon, near freshwater marshes and crop lands. Individuals have been reported near Roxy Ann Peak, in Sams valley, and near Table Rock.

Vernal Pool Fairy Shrimp (*Branchinecta lynchi)*

Habitat is vernal pools. They have only been found in Agate Desert and Table Rock areas.

Western bluebird (*Sialia mexicana*)

In western Oregon, western bluebirds nest in open areas near farms and in clearcuts in standing snags. They nest in natural cavities, old woodpecker holes, and in nest boxes.

Western gray squirrel (*Sciurus griseus*)

Arboreal squirrel that is found in oak, oak-pine, hardwood-mixed conifer, and mixed conifer forests. Feeds mostly on acorns and conifer seeds. Nests in tree cavities or in nests made of sticks and shredded bark.

Western pond turtle (*Clemmys marmorata marmorata*)

Live in most types of freshwater environments with abundant aquatic vegetation, basking spots, and terrestrial surroundings for nesting and over-wintering. Some northwestern 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. There may be specific microhabitat requirements, which are poorly understood at this time.

In many areas, predation on the hatchlings and competition from bullfrogs, bass, and other exotic species is limiting population levels. Adult turtles are relatively long lived, but as the adults age, recruitment is not occurring at levels which can maintain future healthy populations.

Western toad (*Bufo boreas*)

Largely terrestrial, found from sea level to high mountains. They often use rodent burrows. They are nocturnal during dry weather, and may forage in daytime on rainy or overcast days. Optimal habitat is humid areas with dense undergrowth. They have been found beneath bark and within decayed wood in large Douglas fir logs, especially those partially submerged in water. Breed in ponds, pools, and slow moving water in streams. In the Oregon Cascades, they may prefer mud bottomed shallows of lakes and ponds.

White headed woodpecker (*Picoides albolarvatus*)

Presence in the BLM Medford district is undetermined. White headed woodpeckers occur in ponderosa pine and mixed ponderosa forests. They forage mainly on trunks of living conifers for insects. Nest cavities are within 15 feet of ground in dead trees which have heart rot. Standing and leaning snags and stumps are used. Area is in periphery of known range.

White tailed kite *(Elanoides forficatus)*

Also known as black shouldered kite. Habitat is near wooded streams, shelterbelts and groves of trees. These kites feed on rodents and insects and often can be seen hovering over open fields.

Yuma myotis (*Myotis Yumanensis*)

Yuma myotis is commonly found in human structures, closely associated with water nearby. They will use caves as night roost areas. The species is colonial and hangs in a closely clumped group, often under bridges, in mines and caves.

Sources:

Applegarth, John. 1992. Herpetologist, Eugene BLM District, Eugene, Oregon. Personal Communication.

Bureau of Land Management Special Status Invertebrate Species List. 10-30-92.

Bull, Evelyn, Richard S. Holthausen, Mark G. Henjum. 1992. "Roost Trees used by pileated woodpeckers in Northeastern Oregon, Journal of Wildlife Management. 56(4):786-793.

Burt, William H. and Richard P. Grossenhider. 1976. A Field Guide to the Mammals, the Peterson Field Guide Series, Houghton Mifflin Co., Boston.

Cross, Steven P. 1992. Southern Oregon State College Biology Professor. Notes from Oregon Wildlife Society Bat Workshop.

Hammond, Paul. 1992 "Special Status Butterfly Species List" report.

Hammond, Paul. 1994 "Rare Butterfly Assessment for the Columbia River Basin in the Pacific Northwest", Eastside Ecosystems Management Strategy Project.

Leonard, William P., Herbert A. Brown, Lawrence L. C. Jones, Kelly R. McAllister, and Robert M. Storm. 1993. Amphibians of Washington and Oregon. Seattle Audubon Society. 168 pp.

Marshall, David B. 1992. Sensitive Vertebrates of Oregon, Oregon Dept. of Fish & Wildlife.

Medford District Proposed Resource Management Plan, Environmental Impact Statement, (Final) October 1994
Oregon Natural Heritage Program Database Information. 1994.

Nussbaum, Ronald A., Edmund D. Brodie, Jr., and Robert M. Storm. 1983. Amphibians & Reptiles of the Pacific Northwest. University of Idaho Press, Moscow, Idaho.

Wernz, Dr. James, Report to Nature Conservancy Data Base, Dept of Entomology, Oregon State University

BUREAU OF LAND MANAGEMENT
Medford District Office
EVALUATION FOR T&E AND SURVEY AND MANAGE WILDLIFE SPECIES
Conformance Review

Resource Area Butte Falls Resource Area EA or Case File No._____
Project Name Bieber Wasson Projects

THREATENED AND ENDANGERED SPECIES (underline)

1. **YES** NO Wildlife species designated by USFWS "Threatened and Endangered" are known to occur in the project area.

2. **YES** NO The project may affect T&E species.

3. **YES** NO Consultation with USFW has been completed and a Biological Opinion Received.

SURVEY AND MANAGE (Underline)

1. **YES** NO Wildlife species designated as "Survey and Manage" under the Forest Plan and Medford District Record of Decision (ROD) are known to occur in the project area.

2. **YES** NO Suitable habitat for Survey and Manage wildlife species occurs in the project area.

3. **YES** NO The project area is within the range of wildlife species designated as "Survey and Manage" or "Protection Buffer" under the Forest Plan ROD for the following:

   X Great Gray Owl X Red Tree Vole X Mollusk ____Amphibian

. 4. YES **NO** Surveys for "Survey and Manage" or "Protection Buffer" wildlife species not required. List special protection stipulations below, if any.

5. **YES** NO The project may affect Survey and Manage wildlife species.

6. YES **NO** Surveys for Survey and Manage wildlife species have been completed. If NO, when are surveys expected to be completed? Mollusk protocols are expected to be completed in spring and fall 99. Surveys for red tree vole, great gray owl and goshawk were completed in 1998

CONFORMANCE EVALUATION (check one)

1. X The project conforms with the President's Forest Plan FSEIS/EIS and Medford District RMP ROD for Standards and Guidelines relating to Protection Buffer and Survey and Manage species (survey protocols and management recommendations).
2. __ The project does not conform with these plans, but could be modified to conform (see comments).
3. __ The project does not conform with these plans, and could not be modified to conform (see comments).

Stipulations/project design/comments:

Buffer meadows with 300 foot no cut buffer. Buffer great gray owl nest with 1/4 mile no cut buffer.

Signed: Linda Hale (signature on file) Date: 09-23-99
Wildlife Biologist

Appendix D

TABLE II

Bieber Wasson E.A.							
ROAD NUMBER				MILES	SURFACE TYPE	CONTROL	REMARKS
35S	01E	35	A	0.73	PRR	BL	Replace Lick Creek culverts with a bottomless arch
35S	01E	35.01	B	1.63	PRR	PV	Gate
35S	02E	10	A	0.19	NAT	PV	Renovate
35S	02E	10	B	0.59	NAT	PV	Renovate
35S	02E	10	C	1.10	ABC	PV	Renovate
35S	02E	10	D	1.14	ABC	PV	Renovate
35S	02E	10	E	1.36	PRR	BL	Renovate
35S	02E	10	F	0.19	PRR	BL	Renovate
35S	02E	13	A	1.52	ABC	BL	Renovate
35S	02E	13	B	0.14	ABC	PV	Renovate
35S	02E	13	C	1.70	ABC	PV	Renovate
35S	02E	13	D	1.19	ABC	BL	Renovate
35S	02E	13	E1	0.07	ABC	BL	Renovate
35S	02E	13	E2	0.64	ASC	BL	Renovate
35S	02E	13	F	0.74	ASC	BL	Renovate
35S	02E	13	G	0.25	PRR	BL	Renovate
35S	02E	13.02	A	0.28	ABC	BL	Renovate
35S	02E	13.02	B	1.11	ABC	BL	Renovate
35S	02E	13.02	C	0.18	PRR	PV	Renovate
35S	02E	22		0.41	PRR	BL	Renovate
35S	02E	23	A	0.83	ABC	BL	Renovate
35S	02E	23	B	0.55	NAT	BL	Renovate
35S	02E	23	C	0.27	NAT	PV	Renovate
35S	02E	23.06	A	0.97	NAT	BL	Renovate
35S	02E	23.06	B	0.65	NAT	PV	Renovate
35S	02E	24	A	1.04	PRR	PV	Renovate
35S	02E	24	B	1.89	ABC	BL	Renovate
35S	02E	25.01	A	0.25	ABC	BL	Renovate
35S	02E	25.01	B	0.28	NAT	BL	Renovate
35S	02E	27		1.50	ABC	BL	Renovate

ROAD NUMBER				MILES	SURFACE TYPE	CONTROL	REMARKS
35S	02E	27.01		0.46	ABC	BL	Renovate, guardrail
35S	02E	27.03		0.27	ABC	BL	Renovate
35S	02E	27.05		0.51	NAT	BL	Log-earth barricade prop. Line, and decommission
35S	02E	32	A	0.2	NAT	PV	Renovate, Improve, and surface
35S	02E	32	B	1.03	NAT	PV	Upgrade existing gate, and Renovate
35S	02E	33	A	0.1	ABC	BL	Renovate,,Improve, and surface
35S	02E	33	B	0.3	ABC	PV	Renovate,Improve, and surface
35S	02E	34	A	1.05	ABC	PV	Renovate
35S	02E	34	B	0.34	ABC	PB	Renovate
35S	02E	34	C	0.51	ABC	PB	Renovate
35S	02E	34	D	0.27	ABC	PB	Renovate
35S	02E	34	E	0.25	ABC	PB	Renovate
35S	02E	34	F1	0.44	ABC	BL	Renovate
35S	02E	34	F2	0.49	ABC	BL	Renovate
35S	02E	34.02	A	1.20	NAT	PV	Renovate, gate
35S	02E	34.02	B	0.42	NAT	PV	Renovate
35S	02E	34.02	C	1.00	NAT	PV	Gate
35S	02E	34.03		1.51	ASC	BL	Renovate,Gate
35S	02E	34.04		0.31	NAT	BL	Renovate, fully decommission
35S	02E	35.02	A	0.14	ASC	BL	Renovate
35S	02E	35.02	B	0.16	NAT	PV	Renovate
35S	02E	35.03		0.12	NAT	BL	Renovate, fully decommission
35S	02E	35.04		0.11	NAT	BL	Renovate, fully decommission
35S	02E	35.05		0.19	NAT	BL	Renovate, fully decommission
35S	02E	35.06		0.12	NAT	BL	Renovate, fully decommission
35S	02E	35.07		0.08	NAT	BL	Renovate, fully decommission
35S	02E	35.08		0.58	ASC	BL	Renovate
35S	03E	29	E	0.48	ASC	BL	Renovate
36S	02E	3.01	A	1.10	PRR	BL	Gate, Renovate
36S	02E	3.01	B	0.98	ABC	BL	Renovate
36S	02E	3.01	C	1.60	ABC	BL	Renovate
36S	02E	3.02		0.54	NAT	BL	Fully decommission
36S	02E	3.03		0.10	NAT	BL	Fully decommission

ROAD NUMBER				MILES	SURFACE TYPE	CONTROL	REMARKS
36S	02E	7	A1	2.33	BST	BL	Brush
36S	02E	7	A2	1.28	BST	BL	Brush
36S	02E	7	A3	0.08	BST	BL	Brush
36S	02E	7	A4	0.37	BST	BL	Brush
36S	02E	7	A5	0.64	BST	BL	Brush
36S	02E	7	A6	0.73	BST	BL	Brush
36S	02E	7	B1	0.52	BST	BL	Brush
36S	02E	7	B2	1.24	BST	BL	Brush
36S	02E	7	B3	0.86	BST	BL	Brush
36S	02E	7	B4	0.24	BST	BL	Brush
36S	02E	7	B5	0.77	BST	BL	Brush
36S	02E	7	C1	0.36	ASC	BL	Renovate
36S	02E	7	C2	0.11	ASC	BL	Renovate
36S	02E	7	C3	1.06	ASC	BL	Renovate
36S	02E	7	C4	0.69	ASC	BL	Renovate
36S	02E	7	D1	0.80	ASC	BL	Renovate
36S	O2E	7	D2	0.45	ASC	BL	Renovate
36S	02E	7	D3	0.69	ASC	BL	Renovate
36S	02E	7	D4	0.54	ASC	BL	Renovate
36S	02E	7.01	A	1.34	NAT	PV	Gate
36S	02E	11		0.98	ABC	BL	Renovate
36S	02E	11.01		0.17	ABC	BL	Renovate
36S	02E	12		0.71	NAT	BL	Log-earth barricade, Renovate, Improve, and surface
36S	02E	13	A	0.25	NAT	BL	Maintain existing gate, Renovate, Improve, and surface
36S	02E	13	B	0.65	NAT	BL	Renovate, Improve and surface
36S	02E	13	C	1.48	NAT	BL	Renovate, Improve and surface
36S	02E	13.01	A	0.52	NAT	BL	Gate, and Renovate
36S	02E	13.02		0.20	NAT	BL	Renovate, Log-earth barricade, and decommission
36S	02E	13.03	A	0.36	NAT	BL	Renovate
36S	02E	13.03	B	0.08	NAT	PV	Renovate
36S	02E	13.03	C	0.24	NAT	PV	Renovate
36S	02E	13.03	D	0.37	NAT	PV	Renovate
36S	02E	13.03	E	0.16	NAT	PV	Renovate

ROAD NUMBER				MILES	SURFACE TYPE	CONTROL	REMARKS
36S	02E	13.03	F1	0.37	NAT	BL	Renovate
36S	02E	13.03	F2	0.55	NAT	BL	Fully decommission
36S	02E	13.04		0.19	NAT	BL	Fully decommission
36S	02E	13.05		0.26	NAT	BL	Fully decommission
36S	02E	13.06		0.19	NAT	BL	Fully decommission
36S	02E	24	A	0.16	NAT	PV	Gate
36S	02E	26	A	2.21	BST	BL	Brush
36S	02E	26	B	1.15	ASC	BL	Renovate
36S	02E	26	C	0.22	ASC	BL	Renovate
36S	02E	26	D	2.07	ASC	BL	Renovate
36S	02E	26	E	0.90	ABC	BL	Renovate
36S	03E	6	A	0.61	ASC	BL	Renovate
36S	03E	6	B	0.72	PRR	BL	Renovate
36S	03E	6	C	0.22	PRR	BL	Renovate
36S	03E	7.01	A	1.16	NAT	BL	Renovate, guardrail
36S	3E	7.01	B	0.04	NAT	BL	Renovate, decommission
36S	03E	7.02	A	0.38	NAT	BL	Renovate, fully decommission
36S	03E	7.02	B	0.52	NAT	BL	Renovate, guardrail, and decommission
36S	03E	7.03		0.19	NAT	BL	Fully decommission
36S	03E	7.05		0.41	ASC	BL	Renovate
36S	03E	7.06		0.11	ASC	BL	Renovate
36S	03E	18.03		0.64	NAT	PV	Renovate
36S	03E	18.04		0.3	NAT	PV	Renovate
36S	03E	19.02		0.34	NAT	BL	Log-earth barricade, and decommission
36S	03E	19.04	A	0.06	NAT	BL	Renovate, gate
36S	03E	19.04	B	0.10	NAT	BL	Fully decommission
36S	03E	19.05		0.64	NAT	PV	Renovate
36S	03E	20		0.3	NAT	PV	Renovate
36S	03E	29		0.50	GRR	BL	Renovate
36S	03E	29.01		0.90	ASC	BL	Renovate, gate
36S	03E	29.02		1.04	GRR	BL	Renovate, gate
36S	03E	29.03		0.51	GRR	BL	Renovate
36S	03E	29.04		0.20	GRR	BL	Renovate

ROAD NUMBER				MILES	SURFACE TYPE	CONTROL	REMARKS
36S	03E	29.05		0.30	GRR	BL	Renovate
36S	03E	29.06		0.34	NAT	BL	Renovate, log-earth barricade, and decommission
36S	03E	29.07		0.30	NAT	BL	Renovate, log-earth barricade, and decommission

Appendix F

BIEBER WASSON MARKING GUIDELINES

Summary of treatment objectives

1. Within the Transient Snow Zone (TSZ, 3500'-4500'), maintain at least 60-70% canopy closure in all stands designated for density management, mortality salvage or selective cutting. This level of canopy closure will minimize large canopy openings and reduce the potential for increasing the magnitude of peak flows resulting from "rain on snow" events. Outside of the transient snow zone approximately 40% canopy closure would be maintained in stands designated for density management.

2. In stands designated for density management, thin from below to redistribute growth to vigorous dominant and co-dominant trees. In the selective cut stand remove individual trees across all diameter classes to reduce inter-tree competition while maintaining or promoting the development of multiple canopy layers. Both silvicultural methods will reduce the presence of Douglas-fir dwarf mistletoe and favor the maintenance and development of shade intolerant species, such as, sugar pine, ponderosa pine, incense-cedar and black oak.

3. Minimize canopy openings by limiting the amount of regeneration harvests.

4. Mortality salvage would occur in deteriorating and Douglas-fir mistletoe infected stands. Trees removed would be those heavily infected with mistletoe, undergoing insect attack or exhibiting other characteristics of decline or low vigor. Retain 60-70% canopy closure. *Based upon stand conditions, most of these stands should be designated for a regeneration harvest, but consideration of other landscape issues such as transient snow zone, wildlife, connectivity and fragmentation have resulted in the mortality salvage prescription.*

5. Release large ponderosa and sugar pine from competing vegetation. Removal of adjacent trees and shrubs will provide additional growing space, site resources and will reduce the trees' susceptibility to pine beetle attack.

6. Retain large diameter trees for structural diversity, plant and animal habitat and long-term biological legacies.

DENSITY MANAGEMENT (DM)

UNITS: Listed in the table below.

1. Density reduction and the retention of either 40 or 70% canopy closure are the primary objectives for these stands.

   * Stocking will be reduced to Relative Densities of 35-55%. In variable size class stands, standard spacing will be more difficult to achieve, in these stands target to leave approximately 120-140 sq.ft. of basal area for 40% canopy closure and 180 to 200 sq. ft. for 70% canopy closure.
   * In uniform even-aged stands, leave trees need to be the dominant and co-dominant trees with the best crown ratios. In variable stands, leave trees should be the healthiest of any size class greater than 8" dbh..
   * Favor healthy ponderosa pine, sugar pine, incense cedar, white fir, hardwoods and disease-free Douglas-fir. Maximize species diversity to inhibit the spread of mistletoe.
   * If heavily mistletoe infected Douglas-fir trees occur in clumps, small group cuts of 44-48' radius can be done. Occasionally, larger openings may be created, but it is preferable to keep the openings small to reduce mistletoe growth and the initiation of latent mistletoe infections of adjacent residual trees.

2. Retain 4-6 trees per acre of the largest diameter classes in each stand. These trees will provide for structural diversity, plant and animal habitat and long-term biological legacies. To meet this objective, minimize marking any trees at or above the diameters listed in the table below.
3. Large healthy ponderosa pine and sugar pine >20"DBH, will be released from adjacent tree competition by removing all trees and shrubs from the bole of the leave tree out to a distance of ten feet beyond the leave tree's drip line. Tally all pines released in each unit.
4. Leave all hardwoods, for species diversity, canopy layers and root disease resistance.
5. Leave all snags, stages 1-5, except those that are a safety hazard.
6. Leave all coarse woody debris, decay classes 1-5

DENSITY MANAGEMENT - 40% CANOPY CLOSURE - RD 35

TWN-RGE	UNIT	ACRES	TOTAL CANOPY CLOSURE	% OF CANOPY CLOSURE FOR TREES <8"DBH	LARGEST TREES - DBH > or =
35S-2E	29-003	15	100	30	24
	29-004	11	100	0	26
	33-002	12	89	6	
36S-2E	2-001	21	74	21	40
	3-001B	12	100	21	42
	3-004	7	100	36	28
	3-007	7	100	32	38
	3-009	7	100	3	28
	3-016	17	100	10	36
	11-008B	12	87	19	28
	23-003	15	100	5	30
	25-001B & 25-003	96	100	18	24

DENSITY MANAGEMENT - 70% CANOPY CLOSURE - RD 45-55+					
TWN-RGE	UNIT	ACRES	**TOTAL CANOPY CLOSURE %**	**% OF CANOPY CLOSURE FOR TREES <8"DBH**	**LARGEST TREES > or =**
35S-2E	33-001	39	**100**	**7**	**40**
	35-005B	19	100	9	36
	35-005D	8	100	20	36
	35-007B	8	97	0	28
	35-008	6	100	14	-
36S-2E	1-001A	31	100	34	
	1-001B	8	100	34	
	1-002	18	84	24	28
	11-004, 11-008, 11-0011	57	100,87,89	0,19,6	36
	12-004	8	100	9	32
	13-005A	11	81	11	32
	13-005B	54	100	24	32
	13-006	49	100	5	30
	13-007, 13-008, 13-011	45	100,100,100	45,8,14	32
	13-009	4	100	10	32
36S-3E	7-001	16	100	11	28
	7-006	22	93	2	30
	7-008	91	100	9	32
	7-111	22	81	0	26
	19-001,19-002,19-006A,19-006B	38	99,100,100,100	2,0,5,0	34
	20-001	100	83	1	32
	29-001,29-002A	85	100,82	7,9	28
	29-008	29	92	9	34
	29-009B	14	87	20	36
	29-012	4	100	4	44
	29-014	46	80	3	32
	29-015	50	100	8	38

(Acres shown are initial stand exam operational inventory acres. Final unit acres may be smaller due to unit layout, survey and manage buffers or other issues)

MORTALITY SALVAGE (MS)

UNITS: Listed in the table below.

The primary objectives for these stands are: the retention of 60-70% canopy closure, the removal of low vigor, insect infested or Douglas-fir trees with a mistletoe rating of 6, 5 or 4, and the release of large ponderosa and sugar pine.

1). Retention of 60-70% canopy closure is the primary management objective. As a implementation guide, a residual basal area of 180 to 200 sq. ft./acre will provide approximately 70% canopy closure in most stands.

Dependant upon the spatial arrangement of low vigor or heavily infected mistletoe trees, some areas may have a canopy closure greater than 70%, and in other areas less than 70% (refer to the attached canopy closure guide).

EXCEPTIONS: Stand 25-012 & Stand 1-003 currently have canopy closures below 70%. The objective within stand 25-012 is to salvage dead trees in excess of CWD & wildlife needs. This is a connectivity block where retention of 12-18 green trees/acre is targeted, the green tree count >20" dbh is currently below 10 per acre, many heavily infected with mistletoe. Any trees that die after marking may be red marked prior to logging. The objective in stand 1-003, is to remove all Douglas-fir trees infected with mistletoe and any low vigor trees, regardless of the residual canopy closure.

2). Retain 4-6 trees per acre of the largest diameter classes in each stand. These trees will provide for structural diversity, plant and animal habitat and long-term biological legacies. To meet this objective, minimize marking any trees at or above the diameters listed in the table below.

3). Target the removal of low vigor, insect infested and Douglas-fir trees with a mistletoe rating of 6, 5 and 4.

a). Douglas-fir mistletoe

Douglas-fir trees with dwarf mistletoe ratings of 6, 5, and 4 should be targeted for removal (trees with a mistletoe ratings of 6 and 5 have the highest priority for removal). Removal of trees with a lower mistletoe rating may occur where the remaining canopy closure would be at or above 70%.

When trees heavily infected with mistletoe occur in patches, group cuts of 2 acres and less can be done (map openings ½ acre or greater). Keep the openings as small as practical to reduce mistletoe growth and the initiation of latent mistletoe infections of adjacent residual trees. Where possible, leave a buffer of timber of approximately feet in width between group cuts. This buffer between group cuts can have individual trees removed as long as 70% canopy closure is maintained.

b). Low vigor trees, are described as having the following characteristics:

- Tree crown is in poor condition, ragged or thin, with needles that are short or sparse and of poor color.

- Dead and dying twigs or branches in the crown form holes.
- Crown width is narrow and sparse
- Live crown ratio is 25% or less.
- Intermediate or suppressed crown classes. These trees have small crowns that receive little direct sunlight from above and none from the sides (the other characteristics listed above may or may not be present).

c). Insect infested trees

Douglas-fir and white fir trees undergoing attack from bark beetles, 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. Fir 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 of Douglas-fir trees.

Ponderosa and sugar pine trees undergoing bark beetle attack. 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.

4). When available release around vigorous dominant or co-dominant ponderosa pine and sugar pine. All trees, regardless of vigor or size class (except the largest diameter classes retained to meet #2), within 10' of the dripline of released pines should be removed. Pine species selected for release should have <u>large</u> <u>full</u> 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 released around. **TALLY** all pines released in each unit so that further slashing of shrubs and sub-merchantable trees can be appraised for and done following the yarding of logs.

5). Leave all hardwoods, for species diversity, canopy layers and root disease resistance.

6). Leave all snags, stages 1-5, except those that are a safety hazard.

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

MORTALITY SALVAGE - 60% CANOPY CLOSURE					
TWN-RGE	**UNIT**	**ACRES**	TOTAL CANOPY CLOSURE %	% OF CANOPY CLOSURE FOR TREES <8"DBH	**LARGEST TREES - DBH > or =**
35S-2E	21-003	**25**	**74**	**26**	**36**
	21-006	**11**	**69**	**30**	**28**
	23-002, 23-005	**72**	**100**	**18**	**36, 32**
	23-012	**46**	**100**	**20**	**28**
	23-014	**10**	**100**	**18**	**36**
	25-009A	**5**	**100**	**0**	**34**
	25-009B	**26**	**100**	**0**	**34**
	25-012	**11**	**34**	**15**	**MS OF DEAD ONLY**
	27-010A	**24**	**81**	**22**	**30**
	27-010B	**44**	**81**	**22**	**30**
	25-010C	**5**	**81**	**22**	**30**

MORTALITY SALVAGE - 70% CANOPY CLOSURE					
TWN-RGE	**UNIT**	**ACRES**	**TOTAL CANOPY CLOSURE %**	**% OF CANOPY CLOSURE FOR TREES <8"DBH**	**LARGEST TREES - DBH > or =**
35S-2E	**35-005C**	**29**	**100**	**40**	**38**
	35-005E	**32**	**95**	**18**	**34**
	35-007A	**8**	**100**	**4**	**28**
36S-2E	**1-002**	**24**	**84**	**24**	**28**
	1-003	**24**	**73**	**30**	**30**
	3-001C	**11**			**40**
	11-008C	**7**	**87**	**19**	**34**
	13-005C	**35**	**81**	**11**	**32**
	13-005D	**21**	**100**	**24**	**32**
	13-006A	**12**	**85**	**15**	**30**
	13-009A	**3**	**100**	**15**	**32**
36S-3E	7-005 & 12-001	54	83	14	30
	7-008	91	100	9	32
	7-014	12	86	1	34
	19-002A	5	100	10	38
	29-002B	12	82	9	32
	29-008A	38	92	9	34
	29-006	11	99	0	**32**
	32-005	**14**	**82**	**8**	**42**

MODIFIED EVEN-AGED - REGENERATION HARVEST (RH)

UNITS: Listed in the table below.

The minimum requirements are:
1. 1.8 wildlife trees/acre. See the table below for the existing number of snags/acre.
2. 120 linear feet of CWD. See the table below for the existing level of CWD.
3. 6-8 green conifers/acre, >20" dbh (proportionally representing the total range of tree sizes >20"). Leave trees should have the following attributes: a). Windfirm 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. If mistletoe infected Douglas-fir > 20" dbh have to be left to meet the tree count, locate in small groups on the lower slopes of the unit and/or adjacent to the unit perimeter. When possible, locate these groups adjacent to wildlife snags to protect the snag and provide better habitat.
5. 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 30% b). healthy foliage c). disease and insect free.
6. Retain all large hardwoods.
7. Units do not have to be uniform in appearance; diversity, patchiness is desirable.

EXISTING CONDITIONS			
UNIT	ACRES	SNAGS/ACRE > 16"DBH DECAY CLASS1&2	CWD/LFT/ACRE DECAY CLASS 1&2, >16" 16'
36S-2E			
1-001	17	1.6	38
3-001	24	0	0
11-003&11-010	27	2	120+
11-008A	10		
11-009	9	0	0
11-011A	11	3.7	0
13-001	9	0	114
25-001C	11	4.5	114
36S-3E			
7-012	10	.9	120+
7-112	24	6	120+
29-009A	37	_	120+

* approximate acres, layout and traversing may result in changes.

CONNECTIVITY MODIFIED EVEN-AGED - REGENERATION HARVEST (RH)

UNIT: T35S,R2E 25-009C - 11 ACRES

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"). Leave trees should have the following attributes: a). Windfirm 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. If mistletoe infected Douglas-fir > 20" dbh have to be left to meet the tree count, locate in small groups on the lower slopes of the unit and/or adjacent to the unit perimeter. When possible, locate these groups adjacent to wildlife snags to protect the snag as well as to provide better habitat.
5. 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 30% b). healthy foliage c). disease and insect free.
6. Retain all large hardwoods.
7. Units do not have to be uniform in appearance; diversity, patchiness is desirable.

STRUCTURAL RETENTION - REGENERATION HARVEST (RH)

UNITS: T35S R2E 33-005 - 8 ACRES and T35S R2E 13-012 - 20 ACRES

The minimum requirements are:
1. 1.8 wildlife trees/acre. Unit 33-005, 0 snags/acre and Unit 13-012, 1.8 snags/acre.
2. 120 linear feet of CWD. Unit 33-005, 0 lft/acre and Unit 13-012, 0 lft/acre.
3. 16-25 green conifers/acre, >20" dbh (proportionally representing the total range of tree sizes >20"). Leave trees should have the following attributes: a). Windfirm 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 30% b). healthy foliage c). disease and insect free.
5. Retain all large hardwoods.
6. Units do not have to be uniform in appearance; diversity, patchiness is desirable.

SELECTIVE CUT (SC)

UNIT: T36S R3E 29-013 - 12 ACRES

1. 70% canopy closure, the removal of poor vigor trees and density reduction are the primary objectives for this stand.

* Dependant upon the spatial arrangement of poor vigor trees, some areas may have canopy closure greater than 70%, and in other areas less than 70%. Variability is okay, the objective is a stand average of 70% (refer to the attached canopy closure guide).
* Tree selection criteria should be based upon the retention of the desired canopy closure with tree vigor (risk factors) used as the primary aid in determining individual trees to mark. Release of large healthy ponderosa and sugar pine is the first priority, followed by the removal of heavily mistletoe infected (MTR 6,5,4) Douglas-fir, followed by the removal of other trees with high risk characteristics, such as, insect infested, suppressed, chlorotic/thinning crowns. Because of the 70% canopy closure target, many instances will occur when not all of the risk trees can not be removed.
* The average residual basal area should be approximately 180-200 square feet per acre.
* Trees will be marked across all diameter classes up to but not including 44" dbh. Trees in excess of 44" dbh may only be removed if they are heavily infected with mistletoe (mistletoe rating >4) and threaten the health of the surrounding stand. Leave mistletoe infected trees > 44" dbh that are located in topographic positions that are not conducive to the spread of the disease. Such as, draws, lower slopes, and in areas that all adjacent trees are non-host species. These trees will provide for habitat diversity.

2. Favor drought and fire tolerant tree species, such as ponderosa pine. sugar pine, incense-cedar, mistletoe free Douglas-fir and hardwood species. White fir should be left where necessary to meet density levels, canopy closure and when it is a more vigorous tree than adjacent preferred species.

3. When available release around vigorous dominant or co-dominant ponderosa pine and sugar pine. All trees, regardless of size class or vigor (except trees 44"+) , within 10' of the dripline of released pines should be removed. Pine species selected for release 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, do not release around. TALLY all pines released in each unit so that further slashing of shrub can be appraised for and done following the yarding of logs.

4. Leave all hardwoods, for species diversity, canopy layers and root disease resistance.

5. Leave all snags, stages 1-5, except those that are a safety hazard.

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

SHELTERWOOD RETENTION - REGENERATION HARVEST (RH)

UNIT: T36S R3E 29-015A - 12 ACRES

The minimum requirements in this unit are:

1. 1.8 wildlife trees/acre, >20" dbh. 0 snags/acre are currently present.
2. 120 linear feet of ROD CWD. Approximately 171 lft/acre of CWD is present.
3. 12-25 green conifers/acre, >20" dbh. Leave trees should have the following attributes: a). windfirm (dominant/co-dominant) b). disease free, specifically, mistletoe free Douglas-fir. c). Crown ratio >30%, with a healthy crown, dark foliage, dense needles. d). Favor healthy seral species, ponderosa pine, sugar pine, incense cedar, where possible. Tree diameter should not be the deciding factor for removing a tree, crown vigor should.
4. The target canopy closure should be 30% or greater. Depending on stand conditions some areas may have greater canopy closure and others less.
   Reference: 12 TPA >20" dbh = approximately 20% canopy closure.
   18 TPA >20" dbh = approximately 30% canopy closure.
   25 TPA >20" dbh = approximately 38% canopy closure.
   Trees less than 20" dbh will also provide some of the target canopy closure.
5. 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 30% b). healthy foliage c). disease and insect free. Small diameter white fir 8-20" should be left if needed to meet canopy closure targets.
6. Retain all large hardwoods.

RELATIVE DENSITY GUIDELINES

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	AVERAGE 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	AVERAGE 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	AVERAGE 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'

. RELATIVE DENSITY - 50%		
AVERAGE LEAVE TREE DBH	LEAVE TREE BASAL AREA	AVERAGE LEAVE TREE SPACING
8"	141	10
10"	158	12
12"	173	14
14"	187	16
16"	200	17
18"	212	19
20"	224	21
22"	235	22
24"	245	24
26"	255	25
28"	265	27
30"	274	28

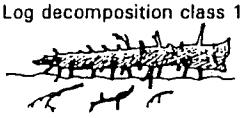
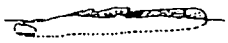
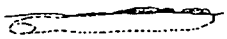
. RELATIVE DENSITY - 55%		
AVERAGE LEAVE TREE DBH	LEAVE TREE BASAL AREA	AVERAGE LEAVE TREE SPACING
8"	156	10
10"	174	12
12"	191	13
14"	206	15
16"	220	17
18"	233	18
20"	246	20
22"	258	21
24"	269	23
26"	280	24
28"	291	25
30"	301	27

Leave Tree Prescriptions and Spacing for Various Canopy Closures

Crown Radius	Trees Per Acre				Spacing Between Boles			
	40%	50%	60%	70%	40%	50%	60%	70%
3 ft.	622	771	925	1,079	8	8	7	6
4 ft.	347	434	520	607	11	10	9	8
5 ft.	222	277	333	388	14	13	11	11
6 ft.	154	193	231	270	17	15	14	13
7 ft.	113	142	170	198	20	18	16	15
8 ft.	87	108	130	152	22	20	18	17
9 ft.	68	86	103	121	25	22	21	19
10 ft.	55	69	82	97	28	25	23	21
11 ft.	46	57	69	80	31	28	25	23
12 ft.	39	48	58	67	34	30	27	25
13 ft.	33	41	49	57	36	33	30	28
14 ft.	28	35	42	50	39	35	32	30
15 ft.	25	31	37	43	42	37	34	32
16 ft.	21	27	33	38	45	40	36	34
17 ft.	19	24	29	34	48	43	39	36
18 ft.	17	21	26	30	50	46	41	38
19 ft.	15	19	23	27	53	48	44	40
20 ft.	14	17	21	24	56	51	46	43
21 ft.	13	16	19	22	59	52	48	44
22 ft.	11	14	17	20	62	56	51	47
23 ft.	10	13	16	18	64	58	52	49
24 ft.	10	12	14	17	67	60	56	51
25 ft.	9	11	13	15	70	63	58	54

Coarse Woody Debris

1. Fallen trees designated for coarse woody debris must have the characteristics of decay classes 1&2, refer to the table below:

A FIVE-CLASS SYSTEM OF LOG DECOMPOSITION BASED ON FALLEN DOUGLAS-FIR TREES						
Log Decomposition Class	Bark	Twigs <3 cm (1.18 in)	Texture	Shape	Color of wood	Portion of log on ground
Log decomposition class 1 	intact	present	intact	round	original color	log elevated on support points
Log decomposition class 2	intact	absent	intact to partly soft	round	original color	log elevated on support points but sagging slightly
Log decomposition class 3	trace	absent	hard, large pieces	round	original color to faded	log is sagging near ground
Log decomposition class 4 	absent	absent	small, soft, blocky pieces	round to oval	light brown to reddish brown	all of log on ground
Log decomposition class 5 	absent	absent	soft and powdery	oval	red brown to dark brown	all of log on ground

2. When using standing trees to meet the CWD objectives use low vigor trees. Low vigor trees have one or more of the following characteristics: 1). The tree crown is in poor condition, ragged or thin, with needles that are short or sparse and of poor color. 2). Dead and dying twigs or branches are present in the crown, forming holes. 3). Crown width is narrow and sparse. 4). Live crown ratio is 25% or less.

Other types of trees that can be left are those with frost cracks, multiple decay conks or heavy lean.

Tree Dbh	Number of pieces per tree 16" X 16'	ROD linear feet per tree
16"	1	16
20"	1	16
22"	2	32
24"	3	48
26"	4	64
28"	4	64
30"	5	80
32"	5	80
34"	6	96
36"	6	96
38"	6	96
40"	6	96
42"-50"	7	112
52"-58"	8	128
60"	9	144

Appendix G

Lick Creek Fisheries Restoration Project

Rational for Implementing the Proposed Project:

Due to the current lack of pool habitat and complex stream habitat features in Lick Creek and an anticipated deficiency of these elements in the foreseeable future, addition of large woody debris into the stream channel is needed. This will result in creating preferred habitat elements for salmonid species found within this watershed as well as improve water quality, such as decreasing water temperatures, through decreasing the channel's width/depth ratio from channel scour caused by the large woody debris (Shuet-Hames et al, 1994).

General:

Lick Creek is located within the Little Butte Creek watershed of the Rogue River Basin. There are a variety of anadromous and resident fish species which occur within Little Butte Creek watershed. Anadromous salmonid species that directly utilize Lick Creek and its tributaries for spawning and/or rearing are coho salmon (Oncorhynchus kisutch), and winter and summer steelhead trout (O. mykiss). Coho, steelhead and cutthroat (O. penetrate deep into the smaller tributaries with steelhead being able to access higher gradient areas that are unattainable to coho. Both anadromous species generally spawn in lower gradient or flat areas of high gradient streams. Coho generally rear for approximately one year in fresh water before migrating to the ocean, while steelhead rear for between one and four years, (two years common), then spend two years in the ocean prior to returning as adults to spawn in fresh water. Variations of this general pattern are common. Resident cutthroat trout (O. clarki) directly utilize Lick Creek and its tributaries for spawning and/or rearing. Cutthroat trout complete their entire life cycle in fresh water and have a wide distribution throughout the Little Butte Creek watershed. Additionally, resident non-salmonid species such as sculpins (Cottus sp.) can be found throughout the watershed as well.

There are numerous habitat elements required by salmonids to complete their life cycles. Two common habitat elements needed by nearly all salmonids for survival, including coho and steelhead, are pools with large amounts of complex cover for rearing, and riffles with clean gravel for spawning. The formation of these features in any stream system is largely related to the abundance and position of large wood in the stream.

<u>Aquatic Habitat</u>

To assess the current condition of aquatic habitat within the Lick Creek system, stream habitats were inventoried over a length of 5.88 miles of the mainstem Lick Creek. Analysis of the inventory data revealed aquatic habitat to currently be in fair to good condition based on relevant stream habitat condition indicators (Table 1).

The most notable stream habitat deficiencies in Lick Creek are the absence of high quality pools, high quality spawning substrate, and large wood.

Project Design Features

To complete the project, thirteen logs that are 14-36 inches dbh will be needed and of those eight will have the root wad attached. Stockpile locations are found near each sites and logs can be dropped off from a self-loading log truck. Logs for the project will come from the Beiber Wasson timber sale. In addition, the access road will be ripped, seeded, and mulched following instream project work.

The use of logs in this size class would be approximately one and one half times the width of the active stream channel. Because of the size and length of these pieces, and the positioning of the structures between stream side trees it is anticipated that no cabling will be necessary.

Conditions/Access

Four project sites were chosen for large wood placement based primarily on stream gradient, canopy closure (% stream shade), quantity of large woody debris, and valley bottom width (a measure of floodplain width). Access to the sites is fairly difficult and may require transportation across an oak meadow to access the site. All large wood placement would be done with a large excavator and positioned according to project layout flagging and project design maps. The placement of large wood pieces is intended to slow water velocities in existing pools and trap finer woody material to create complex cover for fish. In riffles upstream of the placements sites, gravels are expected to fall out creating additional spawning habitat. Access to the four sites for wood placement and reference site is from an existing jeep road that parallels the west side of Lick Creek from the 35-1E-35A road. No new spurs or excavated yarding platforms will be allowed. Landscape terrain adjacent to the project sites is flat to gently sloping, and may include up to 250 feet of foot travel to project sites. Soil disturbance on roads and project areas will be minimized. No road closures are expected while completing this project.

Individual site descriptions

Reach I
Reach one is 70 feet in length and 16 feet wide. The dominant habitat feature here is a long, deep lateral scour pool. The reach is located approximately 200'upstrearn from the 35-lE-35A road crossing. Access to the site is good and is approximately 50 feet from the jeep road. No large wood pieces were found within this reach.

Reach 2
Reach two is 100 feet in length and 17 feet wide. The dominant habitat features here are a combination of riffles at the upstream end of the reach, and a long shallow pool within the middle portion of the reach. Stream shade was minimal. Riparian vegetation includes young willows, which provide minimal shade. No large wood pieces were found within this reach. Access to the site is good and is approximately 75 feet from the jeep road.

Reach 3
Reach three is 115 feet in length and 15 feet wide. Canopy cover is approximately 70%. The dominant habitat feature here is a long pool with abundant large boulders. Riparian vegetation includes approximately 8-10 groups of alders ranging in size from 10"-16" diameter. Access to the site is more difficult, due to the distance from the access road. Small boulders may need to be relocated from the path to the project site. A small, dry side channel must be crossed to access this site.

Reach 4

Reach four is 110 feet in length and 18 feet wide. Access to the site is difficult. The site is located on a creek bend with a dry side channel forming an island. Large alders are abundant on the island. The dominant habitat feature here is a long, deep pool. A steep cut bank was also noted along this reach. The addition of large wood will provide cover and may act as a buffer along the cut bank to prevent further erosion.

Table 1. Aquatic habitat condition summary score sheet from aquatic habitat surveys completed in 1997 (Oregon Department Fish and Wildlife).

Watershed: Little Butte Creek					
Stream Name: Lick Creek					
METRIC	SCALE (1 - 5)	CAT. 1 4-Excellent	CAT. 2 3 - Good	CAT. 3 2 - Fair	CAT. 4 1 - Poor
Pools					
a) Pool Area (%)	2		36%(6)		
b) Residual Pool Depth (m)	4			0.3m (8)	
Small (1st - 3rd order)					
Large (4th order and greater)					.4m(4)
Riffles					
a) Width/Depth (wetted width)	3		12.85(9)		
b) Silt/Sand/Organics (% area)	2				25%(2)
c) Gravel (%)	3			27%(6)	
d) Dominant Substrate	3		Cobble(9)		
e) Subdominant Substrate	2		Gravel (6)		
Riparian Condition					
a) Dominant/Subdominant Tree Species (>15 cm)	2			Hdwd/Con(4)	
b) Conifer Size (cm)	3				15(3)
c) Stream Shade (%)	1				
'Stream Width <12 m				63%(2)	
'Stream Width >12 m					
Large Woody Debris					
a) Pieces >15 cm dbh x 3 m/100m stream	3				1(3)
Water Quality					
Temperature (degrees F.)	1			61 (2)	
Category Subtotals		0	30	22	8
Total Score and Rating	60=good				

Rating Scale

Score	Condition
92-74	excellent
73-55	good
54-36	fair
35-17	poor

References:

Oregon Department Fish & Wildlife Aquatic Habitat Benchmarks, Umpqua River System.

Schuett-Hames, D., A. Plues, L. Bullchild, and S. Hall. 1994. Timber-Fish-Wildlife Ambient Monitoring Program Manual. Northwest Indian Fisheries Commission.

Appendix H.

The 6-Class Dwarf Mistletoe Rating System

Frank G. Hawksworth

Instructions

Step 1—Divide live crown into thirds.

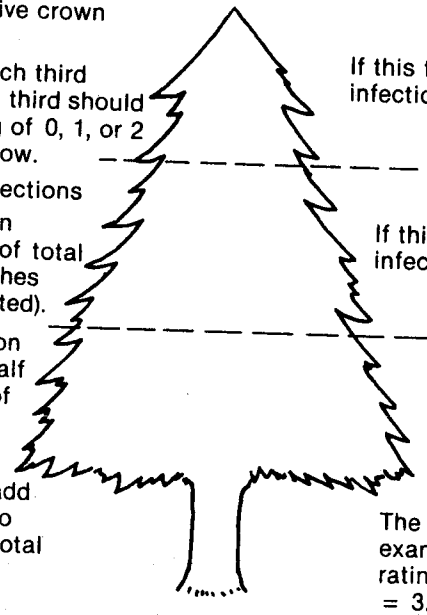
Step 2—Rate each third separately. Each third should be given a rating of 0, 1, or 2 as described below.

0—No visible infections

1—Light infection (one-half or less of total number of branches in the third infected).

2—Heavy infection (more than one-half of total number of branches in the third infected).

Step 3—Finally, add ratings of thirds to obtain rating for total tree.



Example

If this third has no visible infections, its rating is 0.

If this third is lightly infected, its rating is 1.

If this third is heavily infected, its rating is 2.

The tree in this example will receive a rating of 0 + 1 + 2 = 3.

APPENDIX I - STAND INVENTORY SUMMARY TABLE - BIEBER WASSON

DEFINITIONS:

1. T-R-S
Township-Range-Section (T-R-S), the geographic location of the area.

2. OI #
Operational inventory (OI) unit number. This is a stand of trees with similar characteristics.

3. BA SQ FT
Basal area in square feet (BA SQ FT) is a measure of crowding within a stand of trees. Basal area is the area of the cross section of a tree stem at 4.5 feet above the ground.

4. RD
Relative Density (RD) 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 (water, nutrients, sunlight) to support. At a relative density of 35-50%, stand vigor and growth is maximized. At relative densities greater than 60% the following conditions begin to occur:
* Competition related mortality becomes significant.
* Self thinning starts.
* Decline in growth.
* Volume growth/acre is offset by mortality.
* Increased susceptibility to insect attack and disease infection.

5. ROD CWD LFT/AC
Linear feet per acre (LFT/AC) of decay class 1&2 coarse woody debris (CWD) that is at least 16" on the large end by 16' in length as defined in the Record of Decision (ROD C-40).

6. SNAGS/AC, STAGE 1&2, >16"
Number of dead standing stage 1&2 trees per acre greater than 16" diameter at breast height.

BIEBER WASSON STAND SUMMARY								
TWN-RGE	SECTION/OI		CC	TOTAL VOLUME /ACRE BOARD FEET	BA SQ FT	RD	ROD CWD LFT/ACRE	SNAGS /ACRE
35S-2E	29-003A		100	33649	241	.87	0	0
	29-003B		100	68505	300	.89	171	0
	29-004		100	33649	241	.87	0	0
35S-2E	33-001		100	82927	350	1.0	0	2.24
	33-002		89	43310	233	69	0	0
	33-005		100	54420	225	.62	0	0
35S-2E	35-005A		100	645233	282	.83	57	2.85
	35-005B		100	645233	282	.83	57	2.85
	35-005C		100	59724	215	.89	85	6.8
	35-005D		100	49113	265	.99	0	0
	35-005E		95	46091	195	.75	0	0
	35-007A		100	38312	240	.83	0	0
	35-007B		97	40610	260	.77	0	0
	35-008		100	36910	281	.97	0	0
36-2E	1-001A		100	40235	216	.80	38	1.65
	1-001B		100	40236	216	.80	38	1.65
	1-002		84	28390	165	.64	0	3.63
	1-003			25394	113	.53	0	47
36-2E	2-001		74	22651	151	.54	172	4.6
36-2E	3-001A		100	90418	333	.92	0	0
	3-001B		100	71342	321	1.0	68	0
	3-001C		100	86392	315	.94	0	0
	3-004		100	24807	332	1.0	0	0
	3-005		100	92071	423	1.0	342	0
	3-005A		100	92071	423	1.0	342	0
	3-007		100	43596	337	1.0	0	2.54
	3-009		100	84816	354	1.0	0	0
	3-016		100	67150	360	1.0	68	0
36S-2E	11-003		100	57811	271	.94	285	2
	11-004		100	49093	297	.84	146	.67
	11-008A		87	46039	214	.66	0	8.6
	11-008B		87	21068	220	.60	0	0

36S-2E	11-008C		87	46039	214	.66	0	8.6
	11-009		80	44362	220	.60	0	0
	11-010		100	88573	385	1.0	0	0
	11-011		89	44903	223	.69	0	3.7
	11-011ABCD		89	44903	223	.69	0	3.7
36S-2E	12-001		83	61062	287	.63	186	3
	12-004		100	75558	332	1	85	2
36S-2E	13-001		61	45594	198	.41	114	0
	13-005A		81	46828	217	.61	34	8.7
	13-005B		100	38088	251	.98	49	1.9
	13-005C		81	38088	251	.98	49	1.9
	13-006		100	70861	309	.94	103	0
	13-007		100	54591	263	1.0	342	4.5
	13-008		100	66974	302	92	171	0
	13-009		100					
	13-009A		100					
	13-011		100	58119	274	.97	0	3.2
	13-012		37	50521	216	.38	0	1.8
36S-2E	23-003		100	71027	341	1.0	0	0
36S-2E	25-001B		100	23918	268	.97	0	0
	25-001C			32860	252	.81	114	1
	25-003		100	29299	306	1.0	0	1
36S-3E	7-001		100	72318	324	1.0	114	
	7-005		83	61062	287	.63	186	3
	7-006		93	73087	325	.73	0	1
	7-008		100	75558	332	1	85	2
	7-008A		100	75558	332	1.0	85	2
	7-011		81	56673	280	.61	205	3.3
	7-012		83	50045	206	.63	228	.9
	7-014		86	54500	270	.66	342	3.76
	7-112		95	109152	288	1.0	137	6
36S-3E	19-001		99	96492	350	.92	456	3.97
	19-002		100	78741	426	1.0	0	
	19-002A		100	108497	384	1.0	228	4.9
	19-005A		100	52645	312	1.0	114	0
36S-3E	19-005B		100	75398	300	.8	0	6..3

	19-006A		100	75252	438	1	0	0
	19-006B		100	63743	386	1.0	0	0
36S-3E	20-001		83	61778	243	.63	53	.31
36S-3E	29-001		100	74228	332	1.0	0	0
	29-002A		82	53566	242	.62	68	0
	29-002B		82	53566	242	.62	0	4.7
	29-006		99	55866	280	.78	0	0
	29-008		92	73602	295	.72	171	5.7
	29-009A		87	34836	123	.37	171	17.3
	29-009B		87	36441	260	.67	0	0
	29-012		100	58223	326	1.0	0	9.1
	29-013		75	78104	272	.55	68	3.8
	29-014		80	61144	298	60	49	2
	29-015		80	63572	312	.98	38	.3
	29-015A		100	52700	220	.42	171	0
	29-019A		82	53566	242	.62	68	0
36S-3E	32-005		82	76120	290	.62	428	16.5
	32-006		100	76830	360	.90	342	2.18
36S-2E	21-003		74	24464	167	.54		
	21-006		69	20369	131	.49		
36S-2E	23-002A		100	67019	313	.94		
	23-002B		41	25069	120	.55		
	23-005		100					
	23-012		34	25059	119			
	23-014		100					
36S-2E	25-009A		100	45336	187	.35		
	25-009B		100	45336	187	.35		
	25-009C		100	45336	187	.35		
	25-012		34	20765	94	.38		
36S-2E	27-010A		81	27218	174			
	27-010B		81	27218	174			
	27-010C		81	27218	174			

Appendix J

Beiber Wassen Landscape EA
Project Name - Fence Construction Around Spring

Project Background
An unmapped perennial spring was discovered during riparian surveys which contains a large population of aquatic mollusks with an undetermined identification, possibly a new taxon. The spring surfaces mid slope in a ravine bottom surrounded by a dense stand of conifers. The stream channel runs about 300 feet before it disappears subsurface at the approximate location of the property line. A population of undescribed aquatic mollusk occur from the spring and along the entire stream reach. A grazing allotment currently includes the section and cattle graze the area.

Project Description
Approximately 700 feet of fence would be constructed around the mouth of the spring and along 200 feet of stream channel. The fence would be offset approximately 100 feet from the stream channel or at a logical location. An old, existing fence may be utilized also. Cattle would maintain access to approximately 100 feet of stream.

Project Objective
A fence exclosure would reduce the amount of disturbance to the spring and stream channel by:
1. Protect the integrity of the spring mouth and approximately 200 feet of stream channel from cattle.
2. Reduce the amount of grazing along the stream channel and allow riparian and aquatic vegetation to develop and function properly.
3. Conserve and protect the aquatic mollusk population and the micro-habitat of the species at least until more information is gained about it's relationship with other aquatic mollusk species and populations.
4. Allow cattle access to the stream for water.

Appendix K

BIEBER WASSON FUELS PROPOSALS

Fuels treatments will consist of multiple entries designed to reduce existing fuel loadings over time to levels that would approximate natural levels. Fuels treatments will consist of three treatment methods: (locations shown on map)

In the first two stands proposed fuel loadings are currently to high to safely attempt treatment without some form of mechanical intervention prior to the reintroduction of fire.

The first treatment method is to use a slash buster to treat understory vegetation such as brush and associated species. The primary objective is to reduce ladder fuels. There are two secondary benefits associated with this treatment. The first is to reduce moisture competition which should produce a healthier more vigorous stand of trees. The second benefit is to increase wildlife forage. (See wildlife writeup) The slash buster treatment would occur within the White Oak woodland / pine savannah stands. The primary targets of treatment would be wedgeleaf ceanothus, manzanita and in some cases conifer understory vegetation.

This would be followed by a low intensity under burn in one to two years. About 1300 acres are included in this treatment proposal.

The second treatment method is to construct a fuel modification zone. This consists of manually slashing understory vegetation with chainsaws, hand piling and burning. This treatment would be used in strips adjacent to roads and in areas that are unsuitable for the slash buster to work. This would cover about 400 acres. This treatment would also be used in timbered stands that have a dense stagnant fire generated understory.

The third treatment would consist of under burning in stands where fuel profiles are low enough over the majority of the area to allow this treatment without some form of mechanical intervention. Some hand slashing of vegetation may occur in brush pockets prior to burning. In areas where the primary fuel bed is dead spring burns could occur. In areas where the majority of the fuels are live burning would likely occur in the fall. Historically these types of areas would normally burn in the late summer to fall. These stands have little or no fuels that are over three inches in diameter to provide high intensities or long residence times. Without the presence of these fuels little soil heating would be expected to occur. Pine savannah and closed canopy conifer stands would be treated under this proposal. About 1000 acres are proposed for this treatment.