

# ORCHARD ENVIRONMENTAL ASSESSMENT

2002

For Further Information Contact: Jeff Walter  
District Ranger  
Clackamas River Ranger District  
Estacada Ranger Station  
595 NW Industrial Way  
Estacada, OR 97023  
(503) 630-6861

Responsible Official: Gary L. Larsen  
Forest Supervisor  
Mt. Hood National Forest  
16400 Champion Way  
Sandy OR 97055  
(503) 668-1700

CHAPTER I. ....	3
A. Introduction.....	3
B. Desired Future Condition.....	3
C. Purpose and Need.....	5
D. Scoping.....	6
E. Issues .....	7
CHAPTER II. - ALTERNATIVES AND DESIGN CRITERIA.....	8
Design Criteria .....	9
Map .....	13
Comparison of Alternatives with Purpose and Need.....	14
Comparison of Alternatives with Issues .....	15
CHAPTER III. - ENVIRONMENTAL EFFECTS.....	16
A. <a href="#">Watershed and Fisheries</a> (Issue #1 & 2) .....	16
B. <a href="#">Late-successional Reserves</a> (LSR) (Issue #3) .....	21
C. <a href="#">Economics</a> (Issue #4).....	22
D. <a href="#">Coarse Woody Debris</a> (Issue #5).....	23
E. <a href="#">Botany</a> .....	24
F. <a href="#">Wildlife</a> .....	25
G. <a href="#">Soils</a> .....	28
H. <a href="#">Management of Competing and Unwanted Vegetation</a> .....	30
I. <a href="#">Air Quality</a> .....	33
J. <a href="#">Heritage Resources</a> .....	34
K. <a href="#">Scenery</a> .....	34
L. <a href="#">Other</a> .....	35
CHAPTER IV. - CONSULTATION WITH OTHERS.....	36
CHAPTER V. - LIST OF PREPARERS .....	37
Appendix 1 – RESPONSE TO COMMENTS.....	38
Appendix 2 – Other Documents .....	Separate Volume

# CHAPTER I.

## A. Introduction

This Environmental Assessment (EA) describes the analysis of project proposals in the Memaloose Creek subdrainage of the South Fork Clackamas River watershed. This EA is an update from the original version that was delayed by court cases that have since been resolved. This EA has been updated from the original to include new information and to add clarification in response to comments received. The appendix includes public involvement results, biological evaluations and assessments, economic analysis and a cultural resource report.

The planning area is located approximately 30 miles south east of Portland, Oregon. The location of the proposed activities are in sections 4, 5 and 8 of T.5 S., R.5 E.; Willamette Meridian.

This assessment is tiered to the Mt. Hood National Forest Land and Resource Management Plan (hereafter referred to as the Mt. Hood Forest Plan). That document was amended by the 1994 Record of Decision and Standards and Guidelines for the Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl (hereafter referred to as the Northwest Forest Plan). That document has been amended by the 2001 Record of Decision and Standards and Guidelines for the Final Supplemental Environmental Impact Statement for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines (hereafter referred to as the Survey and Manage Plan). The results of the 2001 Survey and Manage Annual Species Review is hereby incorporated by reference. Refer to pages 18-19 of the Survey and Manage Plan Standards and Guidelines.

The Orchard project is primarily in the C1 Timber Emphasis land allocation. Activities are also proposed in a late-successional reserve (LSR) and in riparian reserves.

## B. Desired Future Condition

The following desired future conditions are derived from the **Mt. Hood Forest Plan** as amended.

Health	Forests have low levels of disease, damaging insect populations and storm damage. Four-92, FW-382; and Four-292, C1-22.
Growth	Stands are healthy and vigorous, and have growth rates commensurate with the sites potential (at a rate at which the mean annual increment has not culminated). Four-5, #44; and Four-86, FW-306; and Four-91, FW-372; and Four-90, FW-361.
Scenery	The forest is visually appealing with a wide variety of natural appearing landscape features. Forest stands and openings are blended with natural landforms and existing vegetation, and have natural shapes, edges, patterns, and sizes. This applies throughout the landscape with increased emphasis for areas seen from sensitive viewing positions. Four-218, goal; Four-113, FW-558; and Four-108.
Deer & Elk	The forest provides high quality summer rearing habitat for deer and elk. The forest contains a mix of habitats including forage, thermal cover and optimal cover. Open road

	density is at a level that allows animals a sense of security. Four-72, FW-202 to 210.
Snags & Down Logs	Snags, down logs, and recruitment trees are well distributed across the landscape in sufficient quantity and quality to support species dependent upon these habitats. Early-seral stands are diverse and contain patches of green trees and snags as well as dispersed green trees and coarse woody debris. NFP pages C-40-41.
Timber Emphasis C1	The forest consists of stands with an even distribution of age classes, up to approximately 120 years, running from seedlings to mature timber. Four-290.
Riparian	Riparian areas contain plant communities that are diverse in species composition and structure. They provide summer and winter thermal regulation and nutrient filtering, and have appropriate rates of surface erosion, bank erosion, and channel migration. They also supply coarse woody debris sufficient to sustain physical complexity and stability. Riparian reserves provide mature forest connectivity. NFP page B-11.
Timber Harvest Levels	One of the dual goals of the Northwest Forest Plan is to provide a sustainable level of timber products to stabilize local economies and provide jobs. Timber outputs come primarily from the Timber Emphasis (C-1) portion of the Matrix lands, with lesser amounts coming from the "B" land allocations of the Matrix. Minor amounts of timber may also come from Riparian Reserves or Late-Successional Reserves where harvesting would be used as a tool to enhance resources and move the landscape toward the desired future conditions. NFP pages 2 & 3, Mt. Hood Forest Plan Four-86 & Four-289.
Aquatic	Streams provide a diversity of aquatic habitat for fish and other organisms. They offer sufficient quantities of large woody debris; they have clean and abundant spawning gravel; they have stable banks that are well vegetated and have cool water. NFP page B-11.
Late-Successional Reserve	Late-Successional Reserves contain sufficient quantities of old-growth and mature-forest ecosystems to meet the long-term needs of species such as the northern spotted owl. NFP page C-9.

---

The following statements describe desired future conditions from the **South Fork Clackamas River Watershed Analysis**.

Landscape design	<p>Forests contain a mix of habitats including early, middle and late-seral stands dispersed across the landscape.</p> <p>LSRs and riparian reserves are mature forests or are rapidly moving toward a mature, diverse condition. There are large patches of late-seral interior habitats connected via riparian reserves.</p> <p>Matrix lands provide the majority of the landscape's early-seral habitats with a variety of sizes and shapes. Second-growth stands are healthy, vigorous and windfirm.</p>
------------------	--

## C. Purpose and Need

Many areas do not meet some of the desired conditions described above. The following lists the need for action, the purpose of the project, and a detailed description of the proposed action.

### 1. Second Growth Management - Matrix

<b>Need</b>	Within the planning area, there are some stands of second-growth trees that are experiencing a slowing of growth due to overcrowding. Approximately 230 acres of 80-year-old natural second-growth stands are currently overstocked. If left unaltered, this overstocked condition would result in continued reduction of net annual growth and result in stands with reduced vigor, increased mortality and increased wind damage susceptibility.
<b>Purpose</b>	The objective is to increase health and vigor, and to enhance growth that results in larger windfirm trees. There is also an objective to provide wood products to meet the social needs described in the Northwest Forest Plan.
<b>Proposed action</b>	The proposed action is to thin approximately 230 acres. Approximately 2.2 miles of temporary road would be constructed to access landings. (Approximately 200 feet of temporary road would be in the LSR.)

### 2. Second Growth Management - Riparian Reserves

<b>Need</b>	Within the planning area, there are some stands of second-growth trees in riparian reserves that do not meet the objectives of the Aquatic Conservation Strategy. Approximately 16 acres of 80-year-old natural second-growth stands are currently overstocked and are experiencing a slowing of growth. If left unaltered, this overstocked condition would result in stands of small trees with reduced vigor, increased mortality, increased wind damage susceptibility, and delay of development of structural diversity. These stands would have reduced capability to produce the size and quantity of coarse woody debris sufficient to sustain physical complexity and stability of the riparian reserves and associated streams.
<b>Purpose</b>	The objective is to enhance riparian conditions by improving health and vigor, and to increase growth that results in larger windfirm trees.
<b>Proposed action</b>	The proposed action is to thin approximately 16 acres.

### 3. Regeneration - Matrix

<b>Need</b>	Within the planning area, there is one stand of second-growth that contains trees that are very small and are experiencing extreme slowing of growth and disease due to overcrowding. Approximately 4 acres of 80-year-old natural second-growth stands are currently in a condition where commercial thinning is not feasible due to the small size of the trees, severe mistletoe infection and because crowding is so severe they would not release. If left unaltered, this overstocked condition would result in continued reduction of net annual growth and result in trees that are not likely to grow to a large size.
<b>Purpose</b>	The objective is to convert this stand into a young productive stand that is capable of growth commensurate with the site's potential.
<b>Proposed action</b>	The proposed action is to regenerate approximately 4 acres. Most of the trees would be felled and the site would be prepared for planting with a grapple-piling machine. The larger trees would be retained at the rate of at least 15 per acre. This action is designed to be consistent with standards for regeneration harvest even though no harvest or removal of trees from the site would occur.

### 4. Forage Enhancement

<b>Need</b>	There is a need to have higher quality forage for deer and elk. If no action is taken, there would continue to be little forage.
<b>Purpose</b>	The objective is to increase forage. Another objective is to increase LSR solitude.
<b>Proposed action</b>	The proposed action is to obliterate and revegetate road 4500-242.

### D. Scoping

A scoping process to request public input for this project was conducted. A letter describing the proposed project and requesting comments was sent out in July of 1998. The project also appeared in several issues of Sprouts, a quarterly publication that is mailed to a wide audience. Comments have been received periodically since then. Letter and response to comments can be found in the appendix. The following issues were developed as a result of this scoping.

## E. Issues

The planning process is guided by issues developed during the scoping process. The key issues were a direct result of concerns raised by the public. Analysis of these issues aided in formulating and evaluating alternatives, and defining project design criteria to meet resource management objectives.

### 1. *Water Quality and Fisheries - Roads* (Key Issue)

Both water quality and fish habitats are concerns for many people. Even though the proposed actions have been designed to meet current standards there is still a concern about ground disturbing activities including temporary road construction.

The temporary road construction (2.2 miles) needed to access the landings may pose a risk to water quality and fish by contributing sediment to streams. A qualitative rating will be used to describe impacts to water quality and fish.

### 2. *Water Quality and Fisheries - Riparian* (Key Issue)

Both water quality and fish habitats are concerns for many people. Even though the proposed actions have been designed to meet current standards there is still a concern about ground disturbing activities including thinning in riparian reserves.

Approximately 16 acres of thinning in riparian reserves may pose a risk to water quality and fish by contributing sediment to streams. A qualitative rating will be used to describe impacts to water quality and fish.

### 3. *Late-successional Reserves* (Key Issue)

The proposed action involves the construction of a temporary road through the Late-successional Reserve. The road goes through a second-growth stand that has already been thinned. This action is proposed to reduce total road construction impacts.

Approximately 200 feet of road built through the LSR may affect late-successional dependent species. A qualitative rating will be used to describe impacts to the LSR.

### 4. *Economics* - There is a concern about the economic viability of the proposed action.

5. *Coarse Woody Debris* - The project area contains large quantities of Coarse Woody Debris. This material is a legacy from the previous stand that burned approximately 80 years ago and is in advanced stages of decay. There is no proposal to remove this material but there are concerns that falling and yarding operations may damage the integrity of the substrate, particularly in riparian reserves.

## CHAPTER II. - ALTERNATIVES AND DESIGN CRITERIA

### Projects Considered But Not Included

There are two streams that pass through existing plantations. The adding of large logs to the stream with a helicopter was considered. Surveys indicated no fish presence, so the extreme cost of helicopter use was not considered warranted on these streams. Funding for habitat enhancement would be better used where it would provide a direct benefit to fish.

#### A. Alternative A - No Action.

The proposed thinning would not occur.

#### B. Alternative B - Proposed Action

The proposed action is to thin approximately 230 acres and regenerate approximately 4 acres of second-growth stands in the matrix. Approximately 2.2 miles of temporary roads would need to be constructed to access landings. These 2.2 miles of temporary road as well as ¾ mile of existing road would be obliterated and revegetated. Obliteration includes storm proofing, scarification, installing a berm and seeding. It would also thin approximately 16 acres in riparian reserves. Reconstruction of haul roads is also needed to meet resource protection and safety objectives.

#### C. Alternative C

Alternative C is responsive to issue 1. It would treat the same acres as described in alternative B but would build no roads. Helicopters would be used where necessary to remove logs.

#### D. Alternative D

Alternative D is responsive to issue 2. It would treat the same acres and build the same roads as described in alternative B except that trees in the riparian acres would be girdled and left in place.

#### E. Alternative E

Alternative E is responsive to issue 3. It would treat the same acres as described in alternative B except that instead of building 200 feet of road through the LSR it would build 1900 feet of extra road outside of the LSR (for a total of 2.5 miles).

Unit Summary

	Alt. A	Alt. B	Alt. C	Alt. D	Alt. E
Unit 1	0	40 ac. tractor 65 ac. skyline	105 ac. helicopter	40 ac. tractor 62 ac. skyline	40 ac. tractor 65 ac. skyline
Unit 2a	0	10 ac. tractor 43 ac. skyline	10 ac. tractor 17 ac. skyline 26 ac. helicopter	10 ac. tractor 40 ac. skyline	10 ac. tractor 43 ac. skyline
Unit 2b	0	4 ac. site prep	4 ac. site prep	4 ac. site prep	4 ac. site prep
Unit 3	0	47 ac. tractor 40 ac. skyline	40 ac. tractor 47 ac. helicopter	47 ac. tractor 30 ac. skyline	47 ac. tractor 40 ac. skyline

## Design Criteria and Best Management Practices (BMPs)

1. *BMPs*: Best Management Practices were used in the planning of this project. BMPs are the primary mechanism to enable the achievement of water quality standards to ensure compliance with; 1. The Clean Water Act of 1972, as amended (1977 and 1987); 2. Oregon Administrative Rules (OAR 340-41-001-975, Oregon Department of Environmental Quality (DEQ); and 3. The Memorandum of Understanding between the Oregon DEQ and the USDA, Forest Service.

BMPs are applied as a system of practices that are basically a preventative rather than an enforcement system. BMPs are a whole management and planning system in relation to sound water quality goals, including both broad policy and site-specific prescriptions. BMPs are designed to accommodate site-specific conditions. They are tailor made to account for the complexity and physical and biological variability of the natural environment. General BMPs are described in the document General Best Management Practices, USDA Forest Service, Pacific Northwest Region (11/88). BMPs are primarily based on and include various requirements as Forest Service Manual direction, timber sale contract provisions, environmental documents, Mt. Hood Forest Plan Standards and Guidelines, and the Northwest Forest Plan Standard and Guidelines that includes the Aquatic Conservation Strategy (ACS).

2. *Snags*: Snags would be retained at the level of 3.8 per acre where safety permits. Snag recruitment would generally be from trees that represent the size class and species of the largest cut trees. The scattered old-growth trees present in the thinning stands would not be targeted to meet snag requirements since they are of greater ecological value as standing live trees and will eventually die of natural causes. In skyline areas, tail trees and spar trees that are topped for safety reasons would be counted as replacement snags. If a post harvest review of snag levels indicates that units do not meet the above level, blasting or girdling of up to 2/3 of the target level would be scheduled to create snags by the 5th year after harvest. The remainder would accrue through natural processes.
3. *Woody debris recruitment*: Since existing woody debris is primarily in older decay classes, new woody debris would be created by felling unless a post harvest inspection indicates that adequate levels have been attained with wind damaged trees. In thinning units, fall 3 trees per acre that represent the size class and species of the largest cut trees. The scattered old-growth trees present in the stand would not be felled to meet woody debris requirements since they are of greater value as standing live trees or snags.
4. *Erosion*: To reduce erosion, bare soils would be revegetated. Grass seed and fertilizer would be evenly distributed at appropriate rates to ensure successful establishment. Mulch may be used on slopes greater than 20%. Effective ground cover would be installed prior to October 1 of each year.

Native plant species would be used to meet erosion control needs and other management objectives such as wildlife habitat enhancement. Appropriate plant and seed transfer guidelines would be observed. Non-native species may be used if native species would not meet site-specific requirements or management objectives. Non-native species would be gradually phased out as cost, availability, and technical knowledge barriers are overcome. Undesirable or invasive plants would not be used.

Grass seed would preferably be certified by the states of Oregon or Washington or grown under government-supervised contracts to assure noxious weed free status. In certain cases noncertified seed may be used if it is deemed to be free of State of Oregon listed noxious weeds.

When straw is utilized, it would originate from the state of Oregon or Washington fields that grow state certified seed, or grown under government-supervised contracts to assure noxious weed free status, or originate in annual ryegrass fields in the Willamette Valley. In certain cases, straw or hay from non-certified grass seed fields may be used if is deemed to be free of State of Oregon listed noxious weeds.

5. *Riparian Management:*

- a. Avoid fertilizer use in close proximity to live streams and wetlands. Generally a 10 foot buffer would be used for manual applications. Riparian reserves would be avoided during aerial applications.
- b. Where thinning is planned for riparian reserves, no-cut areas adjacent to streams and wet areas would be "custom designed" on-the-ground. The location of the no-cut boundary and the degree of thinning in the riparian reserve would be designed to achieve aquatic conservation strategy objectives by maximizing tree size, and minimizing the potential for sediment delivery to aquatic systems and to adequately protect the zone of shade influence along perennial streams.
- c. Trees would be directional felled away from the interior of the riparian reserve to minimize yarding disturbances.
- d. Avoid cutting of hardwoods in Riparian Reserves.
- e. Avoid ground disturbance within riparian reserve by using techniques such as full log suspension in skyline units. (If not feasible, one-end log suspension may occur within the dry portions of the Riparian Reserves.) For tractor units, skid trails would generally be located outside of the riparian reserve and trees would be directionally felled and winched.
- f. Avoid yarding corridors through riparian reserves where possible. When harvest occurs within riparian reserves, yard away from streams. Logging systems for each unit would be designed in a manner to minimize the total number of yarding corridors and landings within riparian reserves.
- g. No new landing construction would occur within riparian reserves if it involves road cut or fill-slope preparation. Avoid log landing within riparian reserve if at all possible. If not, existing landings or road surfaces may be used within a riparian reserve if they are located at least 125 feet from streams.
- h. Avoid road construction within Riparian Reserves. If not possible, roads would be located in a manner which minimizes impacts to aquatic resources.

6. *Ground based equipment:* Avoid the use of ground based operations (tractors, skidders, etc.) on slopes greater than 20%, because of the risk of damage to soil and water resources. Skid trails for ground-based equipment would be designated to meet Mt. Hood Forest Plan standards for soils. Restrict ground-disturbing activities to nonsaturated soil areas.

## Project Specific Design Criteria, and Best Management Practices

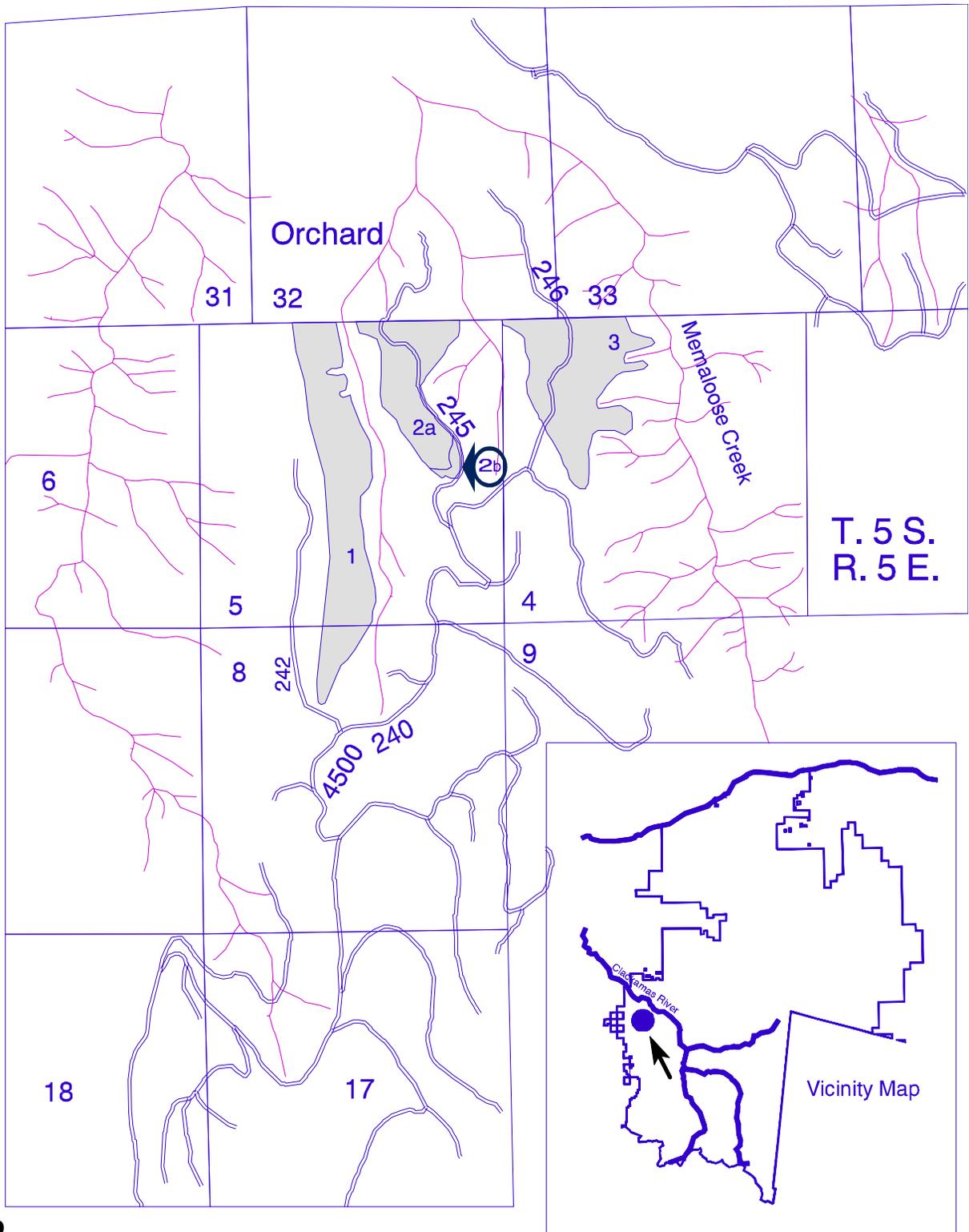
7. *Slash*: When slash is piled in unit 2B, one pile per acre would be retained unburned for use by wildlife.
8. *Soils*: No operation of off-road ground-based equipment would be permitted between November 1 and May 31. Applies to tractor portions of units 1, 2a, and 3 as well as the ground-based equipment on connected projects and road construction, reconstruction, and landing construction. This restriction may be waived if soils are dry or frozen or if operators switch to skyline or other systems.
9. *Peregrine*: No blasting would occur within 3 miles of known nest sites between January 1 and July 31. This applies to all units. If helicopters are used between January 1 and July 31, flight paths must be approved in advance. Routes would be approved that are 2 miles or more from known nest sites.
10. *Big Game Winter Range*: No harvest operations, road construction, use of motorized equipment or blasting would be permitted in Crucial and High Value Winter Range areas between December 1 through March 31. The restriction in the high value zones would be waived if snow accumulation levels are less than 12 inches or if it is determined that the area is not being used by elk. Once restricted, the closure would continue until March 31. The northern portions of units 1, 2a and 3 touch the Crucial Zone. Contracts would list this seasonal restriction, but it would be waived for operations that occur only in the southern summer range portions.
11. *Northern Spotted Owl* – Within the LSR, no noise-generating activities associated with road construction, road maintenance, road obliteration, log haul or post harvest treatments would occur during the critical breeding period (March 1 – July 15). This restriction could be waived if the area were surveyed to protocol and found to be unoccupied (no activity centers or nests within ¼ mile.)
12. *Tree damage*: No ground based or skyline yarding would be permitted between March 1 and July 15th to limit damage to residual trees during times of sap flow. Stem damage is especially a concern for stands with a heavy mixture of hemlock or true fir species that damage easily. Maintain stem damage to below 10%.
13. *Protection of existing woody debris*: Within Riparian Reserves proposed for skyline logging the following practices would be used to protect the existing woody debris in older decay classes from disturbance, to the greatest extent possible. Minimize movement of existing woody debris, and avoid yarding timber over clumps. This would be implemented by designation of skyline corridors and by marking reserve trees around key clumps. One-end suspension of logs would result in minimal disturbance. This measure would not be needed for helicopter units.

For the existing woody debris outside of riparian reserves, the following practices would be used to protect it, to the greatest extent possible, from disturbance. Prior to harvest, contract administrators would approve skid trail and skyline locations in areas that would avoid disturbing key concentrations of down logs where possible. Tractors would stay on designated skid trails and logs would be bucked on either side to minimize the disturbance of logs. In skyline areas, one-end suspension of logs would result in minimal disturbance.

14. *LSR road construction:* Trees cut for road construction within the LSR (the temporary road that extends from the end of road 242 in Alternatives B and C) would be left on site as down woody debris.
15. *Tail trees:* To protect riparian resources, the large trees between Units 1 and 2 may be used as skyline tail trees only if they are kept alive. If second-growth trees are used they may be topped if necessary for safety, since snag creation is targeted for this size tree.
16. *Heritage Resources:* Blaze trees associated with an abandoned trail would be marked as leave trees in Unit 1.

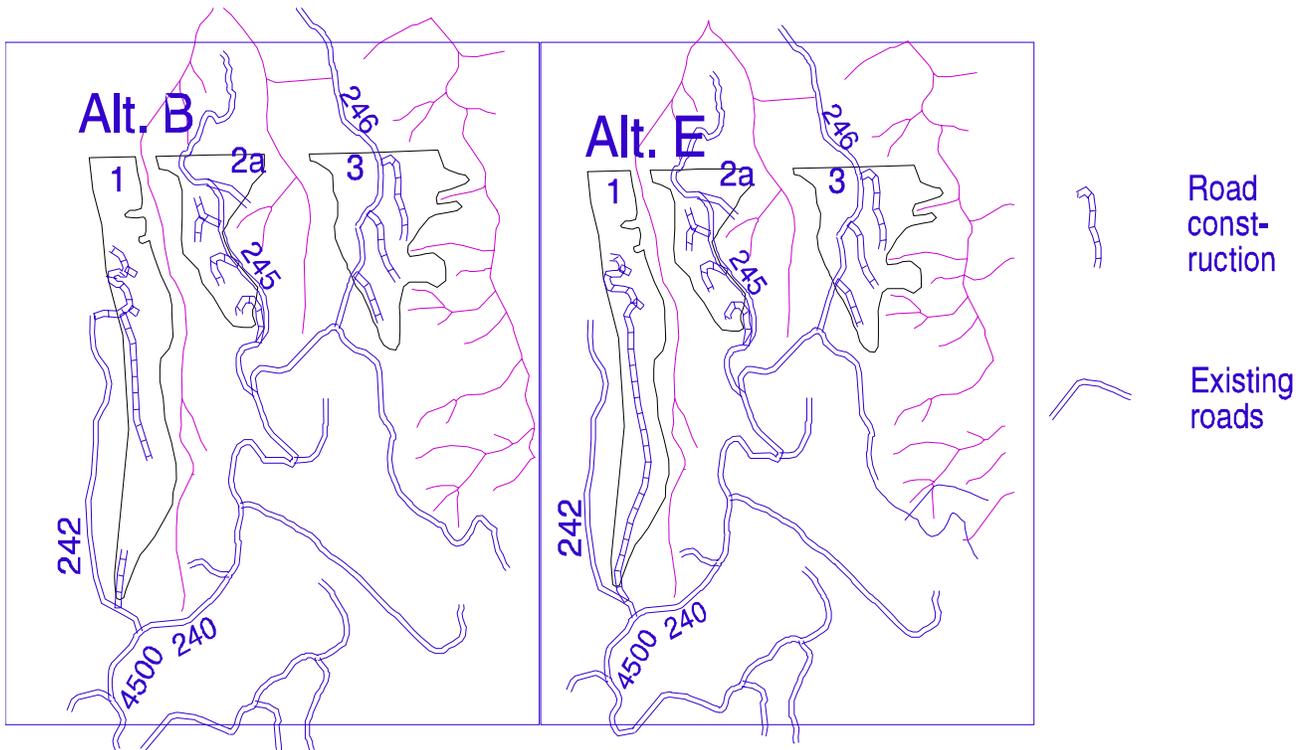
#### OTHER DESIGN FEATURES AND PROJECTS

1. Firewood would be made available to the public at landings where feasible.
2. The proposed action includes road reconstruction that is necessary for resource protection and safety. However there are many items of repair along road 45 that are not related to resource protection and safety that could be repaired using funding from this project.



Map

Road Construction Options (Alt. A&C have no roads; Alt. D is same as Alt. B)



**Comparison of Alternatives with Purpose and Need**

	Alternative A (No Action)	Alternative B (Proposed Action)	Alternatives C, D, and E
<b>Purpose 1</b> Second-Growth Management – Matrix	Does not meet objective. Growth would continue to decline. Health problems increase. Windfirmness declines.	Fully meets objective.	Same As B
<b>Purpose 2</b> Second-Growth Management - Riparian	Does not meet objective. Attainment of Aquatic Conservation Strategy objectives would be delayed. Growth would continue to decline. Health problems increase. Windfirmness declines.	Fully meets objective.	Same As B
<b>Purpose 3</b> Regeneration	Does not meet objective. Stand continues to deteriorate.	Fully meets objective.	Same As B
<b>Purpose 4</b> Forge Enhancement	Does not meet objective.	Fully meets objective.	Same As B

### Comparison of Alternatives with Issues

	Alternative A (No Action)	Alternative B (Proposed Action)	Alternative C	Alternative D	Alternative E
Key Issue 1 <b>Fish and Water and Roads</b> (page 16)	No impacts to water quality from road construction.	2.2 miles of temporary road construction. Some risk of sediment reaching streams from new roads. Adverse impacts eliminated or substantially reduced by use of BMPs and consistency with ACS.	No impacts to water quality from road construction.	Same as B.	2.5 miles of temporary road construction. Slightly greater risk of sediment reaching streams from new roads due to increased length and greater sideslopes.
Key Issue 2 <b>Fish &amp; Water &amp; Riparian Thinning</b> (page 16)	No short-term impacts, in the long term, declining health and longer time to reach late-successional conditions.	16 acres of upland riparian reserves thinned with skyline system. One end suspension of logs. Adverse impacts eliminated or substantially reduced by use of BMPs and consistency with ACS.	16 acres of upland riparian reserves would be logged with a helicopter system. Full suspension of logs.	No impacts to water quality from riparian logging. Girdled trees remain on site causing increased insect mortality. Growth response similar to Alternative B.	Same as B.
Key Issue 3 <b>Late-successional Reserve</b> (page 21)	No roads built in LSR and no roads ripped and seeded in LSR.	200 feet of road built in LSR through second growth. Trees cut average 12 inches diameter and are left on site. ¾ mile of road 242 ripped and seeded. Seasonal restriction. Neutral Effect.	No roads built in LSR. ¾ mile of road 242 ripped and seeded.	Same as B.	No roads built in LSR. ¾ mile of road 242 ripped and seeded.
Issue 4 <b>Economics</b> (page 22)	Planning costs already spent.	Would pay for road reconstruction and all other projects. B/C=1.2	Would pay for road reconstruction but no other projects. B/C=0.36	Similar to Alt. B, add cost of girdling.B/C=1.17	Similar to Alt. B, add more road cost. B/C=1.16
Issue 5 <b>Coarse Woody Debris</b> (page 23)	No disturbance of existing substrate.	Minimal disturbance to existing substrate in riparian reserves, slightly more disturbance in tractor portions.	Disturbance of existing substrate is from falling only in helicopter portion.	No disturbance of existing substrate in riparian reserves. Elsewhere, similar to Alt. B.	Same as Alt. B.

## **CHAPTER III. - ENVIRONMENTAL EFFECTS**

This section provides a comparison of alternatives. Alternatives are compared by the varying effects that they impart on several components of the environment. References are included for each resource to indicate where it is discussed in the Northwest Forest Plan and the Mt. Hood Forest Plan and Final Environmental Impact Statement (FEIS).

This analysis considers not only the direct and indirect effects of these projects but also their contribution to the cumulative effects on resources within the watershed as a result of all management activities. Examples include the Aggregate Recovery Percentage (ARP) index that is used to calculate cumulative effects of past and future harvest activities on hydrology, analyses of the Northern Spotted Owl and other listed plant and animal species, and analyses of deer and elk habitat. The anticipated effects described here consider the proposed actions with BMPs and other design features and their effectiveness.

### **A. Water Quality and Fisheries (Issue #1 & 2)**

#### Mt. Hood Forest Plan References

Forestwide Riparian Standards and Guidelines - FW-80 to FW-136, page Four-59  
Forestwide Water Standards and Guidelines - FW-54 to FW-79, page Four-53  
Forestwide Fisheries Standards and Guidelines - FW-137 to FW-147, page Four-64  
General Riparian Standards and Guidelines - B7-28 to B7-39, page Four-257  
See Mt. Hood FEIS pages IV-22, IV-47, IV-155 to IV-167

#### Northwest Forest Plan References

Riparian Reserves - page A-5  
Aquatic Conservation Strategy - pages B-9 to B-34  
Riparian Reserves Standards and Guidelines - pages C-30 to C-38  
Watershed Analysis - pages E-4, E-20 to E-21

A 70-foot falls on the South Fork Clackamas River near its junction with the Clackamas River is a migration barrier for anadromous fish. The anadromous portion (0.4 miles) of South Fork supports late and early-run coho salmon, summer and winter steelhead, and spring chinook. Native populations of cutthroat and rainbow trout occupy both the South Fork and Memaloose Creeks as well as major tributaries such as the East Fork of the South Fork, Oscar Creek, Elbow Creek and Cultus Creek. Brook trout, which have been stocked in lakes such as Memaloose Lake have proliferated throughout the drainage and may be a competitive concern for resident trout. The South Fork watershed consists of 0.4 miles of anadromous streams, 24 miles of resident fish bearing streams and 69 miles of nonfish-bearing streams. The anadromous portion of the South Fork Clackamas has been considered a crucial spawning area to late run coho because of its location as a low elevation tributary.

There are no "303 (d) listed" streams in the project area. This is an Oregon Department of Environmental Quality designation for a waterbody that exceeds the listing criteria for a particular parameter such as temperature, pH, or dissolved oxygen.

## **Sediment**

### *Road building (Issue 1)*

Currently there are 95.5 miles of road in this 17,647-acre watershed with 84 stream crossings. Current road densities are 3.46 miles per square mile. All roads are midslope or ridgetop roads, no valley bottom roads exist.

With alternatives B and D, ground-disturbing activities such as road construction have been designed to minimize the risk of sediment entering a stream channel from surface erosion and runoff. Impacts to streams would be minimal or unlikely because:

- Proposed temporary roads would be located near ridge tops on gently sloping ground. There are no stream crossings.
- Proposed temporary roads would be obliterated and revegetated directly following the completion of the project.
- Road construction would occur between June 1 to October 31 (dry season).
- Roads would be out-sloped, which would avoid an increase in the drainage network.
- All proposed temporary roads are over 200 feet from any intermittent or year around stream.

Alternative E would be similar to B except that the extra road construction (1900 feet) needed to avoid crossing the LSR would occur on steep sideslopes of 40 to 50%. This would increase the risk of sediment reaching the stream.

Alternatives A and C do not include any road construction. Therefore there would be no risk of additional sedimentation to streams. In Alternative C the use of existing roads may result in very minimal effects on water quality. The helicopter logging proposed in this alternative would have less impact on water quality than the construction and use of roads. Alternative A would not result in any changes in water quality from road building.

### *Riparian Thinning (Issue 2)*

Ground disturbing activities such as logging have been designed to minimize the risk of sediment entering a stream channel from surface erosion and runoff. The proposal to thin 16 acres in riparian reserves is handled differently in each alternative. Alternatives B and E would use a skyline system with one end suspension to remove the logs. There would be minor ground disturbance. Water bars would divert any run off to where it would be dissipated and filtered. There is some risk of sediment entering a stream. All ground based harvest activities and road construction would be subject to dry season restrictions that would minimize ground disturbances. These and other best management practices (BMPs) would allow for very little erosion or transport of sediment to area streams. Thinning of second growth timber typically results in a large amount of branches, needles, and fine organic debris covering the ground. This material greatly reduces erosion potential and transport by acting as mulch/ground cover. Alternative C would use a helicopter to remove the logs, which would result in very minimal ground disturbance. Alternative D would thin the stand by girdling; there would be no soil disturbance but there would be an increased risk of insect mortality in leave trees when bark beetle populations expand in down trees and then move to live ones.

Thinning would reduce tree stocking and increase height and diameter growth of Riparian Reserve trees. This would accelerate the desired development of Riparian Reserve forest stands, into stands having late-seral forest characteristics. Thinning would accelerate recruitment of large woody debris into stream channels. This would move the project area closer to attaining the desired future conditions listed in Chapter I and would provide long-term benefits to aquatic habitat.

Alternative A would not thin the Riparian Reserve. In the short term, there would be very minimal sediment risk but in the long term, health would decline, wind damage susceptibility would increase and it would take much longer to achieve late-successional characteristics.

### *Sediment Summary*

Adverse impacts to water quality and fisheries habitat from sediment delivery from road construction, riparian reserve thinning or from other sources would be eliminated or substantially reduced. State Water Quality Standards would be met through adherence to BMPs. All of the action alternatives for the project were designed to meet the Clean Water Act's requirements for nonpoint-source pollution control through the use of BMPs. The selection and design of the BMPs for these projects were based on site-specific conditions and the water quality standards of the waters potentially impacted. These projects incorporated all the appropriate standards and guidelines from both the Mt. Hood Forest Plan and the Northwest Forest Plan that are related to water quality protection.

### **Other effects**

#### *Aquatic Conservation Strategy (ACS)*

Implementation of the ACS of the Northwest Forest Plan has resulted in dramatically reduced effects on riparian and aquatic dependent resources. The ACS was developed to restore and maintain the ecological health of watersheds and aquatic ecosystems contained within them on public lands of the Pacific Northwest. This conservation strategy employs several tactics to approach the goal of maintaining the "natural" disturbance regime.

The management of overstocked second-growth areas is an integral part of attaining the objectives of the ACS. A watershed analysis has been completed for the South Fork Clackamas River watershed and this project is consistent with its recommendations. The Orchard project has been designed to meet the nine objectives of the ACS. Thinning in Riparian Reserves may pose a short-term risk to water quality and fisheries habitat if sediment is delivered to the tributaries of Memaloose Creek during project implementation. However, this thinning would result in long-term restoration of the riparian area. (See Appendix, Aquatic Conservation Strategy Consistency Findings in fisheries Biological Assessment.)

#### *Hydrology*

The Aggregate Recovery Percentage (ARP) index is often used to calculate cumulative effects of past and future harvest activities on hydrology. It evaluates the risk of increased peak flows from rain-on-snow events. In stands with little or no canopy, snow accumulation on the ground is subject to rapid melting during periods of rain.

The ARP model includes all past and currently planned projects (if any) that affect hydrology in the subwatershed. It also includes other ownerships. In the Memaloose subwatershed there is no private land but the analysis does include adjacent BLM areas. There are no projects being concurrently planned in the Memaloose watershed that were included in this analysis. It is anticipated that in the future other stands in the area will reach an age where thinning is appropriate. The examination of potential thinning opportunities is ongoing. When future opportunities become firm proposals, the ARP analysis would be updated for the environmental assessment prepared for that future proposal. Given the current trend in hydrologic recovery for the Memaloose subwatershed, it is unlikely that any future thinning proposal would compromise hydrologic stability.

When the watershed analysis was done, the ARP value for the Memaloose Creek subwatershed was approximately 74% (page 2-21). The watershed is experiencing a period of steady hydrologic recovery because of the growth occurring in managed stands. It is projected that the action alternatives would have a 0.4% impact on hydrologic recovery. If the thinning occurred in 2004, the ARP value would be 81.4% for the action alternatives compared to the no-action alternative that would be 81.8%. The minimum Forest Plan level for these watersheds is 65%. (Appendix page D40)

*Water Temperature*

Past harvesting activity including salvage of wind damaged riparian areas in the watershed, and road building, has resulted in a lack of necessary shading needed to maintain cool stream temperatures in summer months.

In areas of Riparian Reserve thinning, no-cut buffers would be maintained adjacent to all streams. The size and location of the buffers would be designed, based on site-specific conditions, to achieve ACS objectives. By maintaining the existing canopy over the streams, stream shade conditions would remain unchanged. No change in water temperature is expected. In the long term, riparian thinning would accelerate the attainment of late-seral conditions, further enhancing shade conditions while maintaining adequate stream temperatures. Alternative A would also result in no changes in stream shade conditions or water temperatures.

*Geology*

Landforms were delineated for the Watershed Analysis that was completed for the South Fork Clackamas River watershed. The landforms were delineated based on two factors: (1) their susceptibility to landsliding, both natural and management induced, and (2) the likelihood of sediment from the landslide reaching a defined channel. Each landform type was assigned a "relative hazard rating" during the Watershed Analysis. Each landform type reflects a unique combination of geologic units, slope gradient, and drainage density. The planning area has five landform types.

<u>Landform Type</u>	<u>Abbreviation</u>	<u>Hazard Rating</u>
Weak Rock Steep Slopes	WRSS	High
Weak Rock Moderate Slopes	WRMS	High
Resistant Rock Gentle Slopes	RRGS	Low
Resistant Rock Moderate Slopes	RRMS	Moderate
Resistant Rock Steep Slopes	RRSS	High

A hazard rating of high means there are more potentially unstable areas or a more efficient delivery system or some greater combination of these two factors within that landform type compared to other landform types with lower hazard ratings. Within any landform type there would be some areas with a very low likelihood for sediment-delivering landslides and other areas with an extremely high likelihood for sediment-delivering landslides.

On the landscape scale map, small portions of the project area indicated a High hazard rating. A geologist examined the proposed harvest areas in the field and determined that the units do not include any landslide-prone areas. With the action alternatives, thinning with a skyline system along with BMPs and standard practices including the retention of coarse woody debris, one end suspension of logs and the construction of new roads on gentle slopes are design features that contribute to stability. Alternative A would have no short-term effects to landform stability but in the long term, health would decline, wind damage susceptibility would increase and it would take much longer to achieve late-successional characteristics.

#### *Threatened, Endangered, and Sensitive Species (TES) of Fish*

Lower Columbia River Steelhead (threatened) - Adult Clackamas River winter steelhead (*Oncorhynchus mykiss*) enter the waters of the Mt. Hood National Forest primarily during April through June, with peak migration occurring in May. The native winter steelhead above North Fork Dam use the majority of the mainstem and tributaries as spawning and rearing habitat. The steelhead juveniles in the Clackamas River smolt and emigrate downstream March through June during spring freshets. The Big Bottom area of the Upper Clackamas River provides high quality habitat for both adult spawning and juvenile rearing. The effects rating for Lower Columbia River Steelhead for this project is "May Affect, Not Likely to Adversely Affect."

Columbia River Bull Trout (threatened) - Bull trout (*Salvelinus confluentus*) were once prolific throughout the Clackamas River and its tributaries. At present, they are believed to be extinct in the Clackamas system. Intensive electrofishing and snorkel surveys conducted by the U.S. Forest Service and the Oregon Department of Fish and Wildlife have never yielded capture of bull trout. In 1998 the U.S. Fish and Wildlife Service found that listing of bull trout in the Columbia River segment as threatened was warranted. After several years of intensive sampling, U.S. Forest Service fisheries biologists believe that bull trout in the Clackamas River are considered to be "functionally extinct." The effects rating for bull trout for this project is "No Effect."

Upper Willamette River Chinook (threatened) - The Clackamas River spring chinook salmon consist of both naturally spawning and hatchery produced fish. Adult Willamette River spring chinook (*Oncorhynchus tshawytscha*) enter the Clackamas River from March through August. Spawning occurs in the mainstem and larger tributaries during mid-September through early October. The effects rating for spring chinook salmon for this project is "May Affect, Not Likely to Adversely Affect."

Lower Columbia River Chinook (threatened) - (*Oncorhynchus tshawytscha*)  
Columbia River Chum salmon (threatened) - (*Oncorhynchus keta*)  
Redband Trout (sensitive) - (*Oncorhynchus mykiss*)

The effect analysis for Lower Columbia River fall chinook and Columbia River chum salmon, for this project is "No Effect." Fall chinook spawn below River Mill Dam on the Clackamas River and do not

occupy the river above the dam. Fall chum historically have inhabited the lower portion of the Clackamas River but no current records are available to confirm any chum presence within the Clackamas River. The effect determination for redband trout is "No Impact". Redband trout do not occur in the Clackamas River or its tributaries.

Lower Columbia River Coho Salmon (candidate) - Lower Columbia River coho salmon (*Oncorhynchus kisutch*) in the Clackamas River are the last significant run of wild late-run winter coho in the Columbia Basin. Coho salmon occupy the Clackamas River and the lower reaches of streams in the Upper Clackamas watershed, including the Oak Grove Fork. Adult late-run coho enter the Clackamas River from November through February. Spawning occurs mid-January to the end of April with the peak in mid-February. Peak smolt migration takes place in April and May. The effects rating for coho salmon for this project is "May Affect, Not Likely to Adversely Affect."

Lower Columbia River Cutthroat Trout (proposed) - Lower Columbia River cutthroat trout (*Oncorhynchus clarkii*) enter the Clackamas River in September and October. They are found in the larger tributaries below River Mill Dam. The effects rating for cutthroat trout for this project is "May Affect, Not Likely to Adversely Affect."

## **B. Late-successional Reserves (LSR) (Issue #3)**

### Northwest Forest Plan References

Late-Successional Reserve Standards and Guidelines - page C-9 to C-21

The proposed action involves the construction of approximately 200 feet of road through the LSR. The following standard is quoted from page C-16 of the Northwest Forest Plan.

"Road construction in Late-Successional Reserves for silvicultural, salvage, and other activities generally is not recommended unless potential benefits exceed the costs of habitat impairment. If new roads are necessary to implement a practice that is otherwise in accordance with these guidelines, they would be kept to a minimum, be routed through non-late-successional habitat where possible, and be designed to minimize adverse impacts. Alternative access methods, such as aerial logging, should be considered to provide access for activities in reserves."

### Effects

The area has second-growth trees that have already been thinned by a previous project. The sizes and quantity of trees that would have to be removed from the road right-of-way in the LSR are as follows: 19 trees < 12 inches diameter, 15 trees 12 to 17 inches, 2 trees 18 to 21 inches. Trees cut for road construction within the LSR (Alternatives B and D) would be left on site as down woody debris. The road would be obliterated upon completion of the project.

Unit 1 borders the LSR to the west and Units 1, 2, and 3 border the LSR to the north. The primary effect to late-successional dependent species would be from disturbance associated with construction and log haul on road 242. A seasonal restriction for Unit 1 would minimize this disturbance for all action alternatives. Compared to other roads in the LSR such as Highway 224, the disturbance from this road would be relatively minor and of short duration. No late-successional habitats would be altered.

Alternative E would build a different network of roads to access the landings of unit 1. It would build 1900 feet of extra road to eliminate the need for the 200-foot section in the LSR.

Alternatives A, C, and E would build no roads in the LSR.

After implementation, road 242 would be obliterated and revegetated. In the long term this road obliteration would reduce human accessibility and increase the overall integrity of the area, while providing high quality forage to deer, elk and other wildlife. The biological evaluation indicates that the action alternatives would have a neutral effect to the LSR because the stand's ability to function as dispersal habitat would not be altered, down woody material added would increase the stand's late-successional characteristics and disturbance would be avoided with a seasonal restriction.

### C. Economics (Issue #4)

#### Mt. Hood Forest Plan References

Forest Management Goals - 19, page Four-3  
See FEIS page IV-112

#### Existing Situation

One of the dual goals of the Northwest Forest Plan is to provide a sustainable level of timber products to stabilize local and regional economies and provide jobs. Timber outputs come primarily from the Timber Emphasis (C-1) portion of the Matrix lands, with lesser amounts coming from the "B" land allocations of the Matrix. Minor amounts of timber may also come from Riparian Reserves or Late-Successional Reserves where harvesting would be used as a tool to enhance resources and move the landscape toward the desired future conditions.

The objectives for this project involve the targeting of certain stands that happen to have marginal economic value. The primary costs associated with the project are yarding costs, temporary road construction costs and reconstruction work on road 45.

The following table shows the results of an economic analysis. See the Appendix I.

	Timber Value \$ 1/	Agency Costs \$	Present Net Value \$ 3/	Benefit/ Cost ratio	Cost of planned KV projects and Road Repair
Alt. A	0	2/117,730	-117,730	0	no projects or road repair funded
Alt. B	415,157	261,709	59,618	1.2	all projects are funded = \$154,814
Alt. C	119,689	249,190	-185,854	.36	\$78,550 funded and \$76,264 unfunded
Alt. D	380,283	242,467	47,811	1.17	\$219,677 funded and \$7,137 unfunded
Alt. E	402,782	263,012	47,571	1.16	all projects are funded = \$154,814

1/ Timber Value includes the value of the removed timber minus the logging costs and road costs and represents a potential minimum bid.

2/ The costs of planning up to this point.

3/ The Present Net Value includes the Timber Value minus Agency Costs and minus cost of required treatments all discounted to the present.

Alternative A (no action) would not produce any timber products to meet the public demand for wood. It would not create employment for local or regional economies. No funding would be available for other projects, including the reconstruction of Forest Road 45, which is in need of repair. By not funding this reconstruction now, future costs for the road repair may increase due to continued deterioration. As the table above shows, there would be no return on the planning costs already used for this project. In addition, loss of potential growth by not thinning these forest stands would contribute to a future loss of wood products and associated revenues.

All of the action alternatives have sufficient value for the timber sale to have a high likelihood of receiving bids. Alternatives B, D, and E would have sufficient revenue to cover all required treatments and alternative C would not. Alternatives A and C are the only alternative that would not generate sufficient revenue to recover planning costs. A timber sale would be appraised just prior to advertisement, so the figures discussed above would likely change in today's fluctuating markets, but the relative difference between the alternatives would remain the same.

A project level roads analysis is included in the appendix. Road construction, reconstruction, maintenance and obliteration are a substantial cost component for this project (\$184,000 for alternative B). The proposed action and its road related features were carefully designed to provide for a road system that is safe for the public, environmentally sound, affordable and efficient.

## **D. Coarse Woody Debris (Issue #5)**

### Mt. Hood Forest Plan References

Forestwide Wildlife Standards and Guidelines - FW-219 to 229, page Four-74

### Mt. Hood Forest Plan References

Matrix Standards and Guidelines - pages C-40

### Existing Situation

The project area contains large quantities of coarse woody debris. The level of woody debris in the stands is so great that it impedes the movement of deer, elk, and other large animals. This material is a legacy from the previous stand that burned approximately 80 years ago and is in advanced stages of decay. There is no proposal to remove this material but there are concerns that falling and yarding operations may damage the integrity of the substrate, particularly in riparian reserves.

### Effects

With Alternative A there would be no opportunity to create down logs in a younger age class.

Alternatives B and E would provide the opportunity to create new down wood in the stands. Some down wood would come from trees that fall down and some would be felled. While it is desirable to have down wood in a mix of decay classes, in the long term, this new wood would decay quickly because of its relatively small size class and it would not provide this diversity for very long. Falling and yarding operations could damage the woody debris substrate, which is a concern in the riparian reserves. Design criteria describe precautions to be taken to protect the substrate within the riparian reserves and elsewhere.

The effects of Alternative C would be similar to those of Alternative B except that almost 2/3 of the acres proposed for timber harvest would be logged by helicopter. In those areas the integrity of the woody debris substrate would be protected.

Alternative D would also be similar to Alternative B except that trees would be girdled in riparian reserves rather than harvested. This would result in no disturbance to the woody debris substrate. Girdled trees would eventually contribute to down wood levels. This could provide for a steadier recruitment of down wood in the future.

## **E. Botany**

### Mt. Hood Forest Plan References

Forestwide Threatened, Endangered and Sensitive Plants and Animals Standards and Guidelines - FW-170 to FW-186, page Four-69  
See FEIS pages IV-76 and IV-90

### Mt. Hood Forest Plan References

Survey and Manage Plan and Annual Species Review

## **Threatened, Endangered and Sensitive Plant Species**

There are no Threatened or Endangered plants in the project area. The Orchard Project area includes habitat with the potential for the occurrence of ten species of Sensitive plants. Previous surveys adjacent to the project area have indicated the occurrence of two listed Sensitive plant species. The species, *Huperzia occidentalis* (fir club moss) and *Corydalis aquae-gelidae* (cold water corydalis), are found in association with riparian habitats such as forested seeps, streams, and mainstem channels. Surveys within the Orchard Project area resulted in no documented Sensitive plant sites.

Riparian reserves within the Orchard Project Area serve as habitat for many vascular plants, lichens, bryophytes, and fungi. They provide specific light, temperature, moisture, and substrate regimes. Microhabitats, which are characterized by the distribution of certain organisms, are found within these reserves. These distributions may be quite localized because of specific differences in degrees of change to substrate, temperature, moisture, and other conditions such as slope and aspect. Organisms such as vascular plants, lichens, bryophytes, and fungi may occupy specific niches within these microhabitats. Surveys have been conducted and no species were found. There would be no effects to Threatened, Endangered and Sensitive plant species with any of the alternatives.

## **Survey and Manage Vascular Plant, Lichen, Bryophyte, and Fungi**

The Survey and Manage Plan contains requirements to conduct surveys according to established protocol and to manage known sites. All required surveys have been conducted. No species were found that require the management of known sites.

There would be no adverse effects to Survey and Manage vascular plant, lichen, bryophyte or fungi species.

## **F. Wildlife**

### Mt. Hood Forest Plan References

Forestwide Diversity Standards and Guidelines - FW-162, page Four-68  
Forestwide Wildlife Standards and Guidelines - FW-187 to FW-214, page Four-71  
Forestwide Wildlife Standards and Guidelines - FW-215 to 240, page Four-74

Deer and Elk Standards and Guidelines - B10-12 to B10-28, page Four-274, B11-9 to B11-25, page Four-278, B8-11 to B8-24, page Four-263, B2-18 to B2-31, page Four-224, See FEIS page IV-90  
Forestwide Threatened, Endangered and Sensitive Plants and Animals Standards and Guidelines - FW-170 to FW-186, page Four-69. See FEIS pages IV-76 and IV-90

### Northwest Forest Plan References

Matrix Standards and Guidelines - pages C-39 to C-61  
Consultation - Endangered Species Act - page A-2  
Critical Habitat for Northern Spotted Owl - page A-3  
Standards and Guidelines Common to All Alternatives: Exceptions - page C-3  
Survey and Manage Plan and Annual Species Review  
Known Spotted Owl Activity Centers - pages C-10 and C-45

### Northwest Forest Plan FSEIS References

Chapters 3&4: Affected Environment and Environmental Consequences - pages 205-258

### Existing Situation and Effects

The analysis area was evaluated to determine which threatened, endangered, and sensitive species might be expected to occur based on known locations or presence of habitat. Surveys were conducted where necessary for species having suitable habitat within the analysis area. The following describes the existing situation for each species and effects of the alternatives.

#### *Northern Spotted Owl* (threatened)

Spotted owls are dependent on all attributes of a late-successional forest, including large diameter trees, a multilayered canopy, the presence of large snags and large coarse woody debris in various decay stages. Currently the second-growth stands in the Orchard planning area are classified as dispersal

habitat, however, the quality of the habitat is marginal due to the excessive density of the stands that results in a low population of prey species. The nearest known spotted owl activity center is more than 4000 feet from the nearest proposed action.

With alternative A the marginal quality of dispersal habitat would continue. In the short term, the action alternatives would degrade 246 acres of dispersal habitat, but it would remain suitable for dispersal. In the long term, the site characteristics would improve by providing a structurally diversified stand. Dispersal habitat would become more effective. The biological evaluation indicates that the action alternatives would get a rating of "May Affect, Not Likely to Adversely Affect." Formal consultation occurred in July of 1998. A seasonal restriction would minimize disturbance to owls during the primary nesting season.

*Peregrine Falcon* (sensitive)

A nesting pair of falcons occupy a cliff adjacent to the Clackamas River. The Orchard planning area falls within the falcon's tertiary protective zone (2 to 3 miles), where the primary management focus is prey and prey habitat. The stands in the project area are dense and lack structural diversity that has resulted in few prey species (primarily birds).

The action alternatives would enhance prey species diversity by thinning and by retaining snags at the 100 percent biological potential level. The biological evaluation indicates that the action alternatives would get a rating of "Beneficial Effect."

*California Wolverine* (sensitive)

Potential habitat for the wolverine does exist within the watershed; however, the presence of this species has not been established to date. Current conditions in the project area do not suggest the wolverine would use this area since it lacks structural diversity and prey species.

The action alternatives would create a beneficial long-term affect to wolverine. This project would have a rating of "Beneficial Impact."

*Deer and Elk* (indicator species)

Deer and elk utilize the Orchard area primarily as summer range and a small portion of the area is winter range. Available thermal cover, especially optimal cover (thermal cover with forage interspersed in small openings) and open road density have been analyzed for Orchard using fixed analysis areas.

**Existing Situation and Post Harvest Habitat Conditions**

	Minimum from Forest Plan	Summer "Memaloose"		Minimum from Forest Plan	Winter "South Fork"	
		pre	post		pre	post
Optimal Cover %	20	29	29	20	51	51
Optimal and Thermal Combined %	30	55	55	40	72	72

Quality forage is lacking due to the density of the stands and the amount of ground covered with woody debris. The three proposed harvest areas are currently thermal cover. Alternative A would have no reduction of optimal or thermal cover but would also not enhance forage. The effect of the action alternatives would be to improve summer and winter range habitat by creating forage while retaining the stands thermal cover characteristics.

	Maximum from Forest Plan	Summer "Memaloose"		Maximum from Forest Plan	Winter "South Fork"	
		pre	post		pre	post
Open Road Density miles / square mile	2.5	1.7	1.7	2.0	0.3	0.3

Alternative A would not have any new roads and would not close any roads. Alternatives B, D, and E have proposed temporary roads that would be obliterated after use, resulting in no change in road density. Alternative C has no new road construction. All action alternatives have a connected project that would obliterate ¾ mile of existing road. This would not result in an overall reduction of open road density in the project area since this road has already been closed and no longer contributes to open road density calculations.

*Pine Marten and Pileated Woodpecker (indicator species)*

Most of the proposed harvest units contain habitat for Pine Marten and Pileated Woodpecker. The action alternatives would alter this habitat slightly but it would still be suitable habitat. The Northwest Forest Plan provided for the needs of these species by the delineation of late-successional reserves and other land allocations. The South Fork Clackamas River Watershed Analysis recommended that the habitat management areas for these species in the Mt. Hood Forest Plan (B5) were not needed and they were deleted as recommended in the Northwest Forest Plan.

*Survey and Manage Species*

The Survey and Manage Standard and Guideline of the Northwest Forest Plan contains requirements to conduct surveys according to established protocol and to manage known sites.

All of the required surveys have been conducted (including surveys for red tree voles). No species have been found that require management of known sites. Refer to 2001 Annual Species Review.

**Other Wildlife Habitats**

Snags would be retained at the 100 percent biological potential level ensuring adequate levels of habitat for species that depend on snags.

The project area contains some small wetlands, seeps, and springs which are important to certain wildlife species such as salamanders, birds and small mammals. No-cut buffers have been established around these areas.

Habitat for migratory birds is provided by the maintenance of a diversity of habitats at the landscape level and by the retention and creation of snags at the local level. Every migratory species requires different habitats and some are increasing while others are in decline. There are approximately eight species in the western cascades that are in decline (Partners in Flight Conservation Plan). For most species it is not known what is causing the declines but management practices on the Mt. Hood National Forest provide for a wide diversity of habitat types and the retention of snags. The watershed analysis (South Fork Clackamas, pages 2-50 and 2-66) describes landscape patterns and the snag habitat situation for several species including migratory birds. At the landscape level (5<sup>th</sup> field watershed scale) there would be no adverse effect to migratory birds from any of the alternatives. In the Orchard units, snags will be retained at the 100% biological potential level. The proposed thinning may affect migratory birds that rely on unthinned second growth, however in the watershed there are many acres of unthinned second growth in the LSR that would provide for these species (watershed analysis maps 1-4 and 2-10). Executive Order 13186 (1/10/2001) directed agencies to develop a memorandum of understanding within two years with the U.S. Fish and Wildlife Service to develop protocols for the analysis of migratory bird habitat. That process is not yet completed.

## **G. Soils**

### Mt. Hood Forest Plan References

Forestwide Soil Productivity Standards and Guidelines - FW-22 to FW-38, page Four-49

Forestwide Geology Standards and Guidelines - FW-1 to FW-21, page Four-46

Earthflow Standards and Guidelines - B8-28 to B8-41, page Four-264

See Mt. Hood FEIS pages IV-11, and IV-155 to IV-167

### Northwest Forest Plan References

Coarse Woody Debris Standards and Guidelines - page C-40

Soil Disturbance Standards and Guidelines - page C-44

Modify Fire and Pesticide Use, Minimize Soil Disturbance Standards and Guidelines - page C44

Fire and Fuels Management Standard and Guideline - page C-48

### Existing Situation

Soils in the Orchard area are classified in the Mt. Hood Soil Resource Inventory (SRI) as primarily mapping unit 323. Slopes in this area vary from 10 to about 30 percent. The tractor portions as well as all of the proposed road construction fall within mapping unit 323. The SRI interpretation for surface erosion for this soil-mapping unit is “slight”, and “moderate” for subsoils. Soil compaction hazard is “moderate.”

The project area also contains portions of mapping units 324, 325 and 200. Slopes in these areas are steeper, (30-60%) and would be harvested using a skyline or helicopter system. Mapping units 324 and 325 have a moderate surface erosion hazard rating and mapping unit 200 has a severe surface erosion hazard rating.

Based on field observations and aerial photo interpretation, the current level of detrimental soil impacts is zero for Unit 1 and less than 1% for the other units.

Harvest units were examined and determined to be suitable for timber management in terms of soil productivity.

Effects

Potential soil disturbances that have been considered include compaction from heavy equipment, and the displacement of soil and organic matter by harvesting or site preparation equipment and erosion. Other factors considered were potential effects caused by fire, effects to mycorrhizae, and effects to long-term site productivity. Design criteria and other project design features for harvest units and road construction would result in meeting applicable standards for soil protection for all alternatives.

**Harvest Acres/Logging System by Alternative**  
ACRES

	Alt A	Alt B	Alt C	Alt D	Alt E
Helicopter	0	0	178	0	0
Skyline	0	148	17	132	148
Tractor	0	97	50	97	97
Mechanical Site prep.	0	4	4	4	4
Temp. Road Construction	0	5	0	5	6
Soil Impact %	0-1%	6.8-7.9%	0-2.8%	7-8.1%	6.8-7.9%

Alternative A would not disturb any soil. The action alternatives would result in varying minor amounts of soil disturbance depending on the harvest method. Alternatives B and E would harvest timber using both skyline and tractor systems. Skyline systems have one end suspension of logs during in haul resulting in some soil disturbance directly under the cable as well as some disturbance during lateral yarding. Alternative D proposes fewer skyline harvest acres, with no harvest planned in Riparian Reserves. This would result in very little, if any, effects on soils within the Riparian Reserves.

Alternatives B, D, and E would have the same amount of acres for tractor harvesting. Tractor logging is planned where slopes are less than 20%. A dry season soil restriction would be in effect to further minimize compaction and other soil disturbances.

Varying lengths of temporary road would also be built under these alternatives. The temporary roads would be obliterated and revegetated after completion of the project. In the short term, these roads would contribute to increased compaction, possible localized surface erosion, and other soil disturbances. Over time, after the obliteration and revegetation of the roads, adverse effects would dissipate. Removal of the roads would reduce compaction and minimize the potential for surface erosion.

Alternative C would harvest timber primarily with helicopter. Helicopter systems result in minimal soil disturbance. This alternative still calls for tractor and skyline systems, but on fewer acres. The overall effects on soil conditions would be less than in the other action alternatives. In addition, no temporary roads would be built under this alternative, avoiding further soil disturbances.

## **H. Management of Competing and Unwanted Vegetation**

This analysis covers the proposed site preparation treatment project on Orchard Unit 2B, treatment of slash from roads and landings, and the management of noxious weeds. Provisions of the FEIS do not apply to commercial thinning activities. Guidance for implementing the Record of Decision and Mediated Agreement (MA) for the "Managing Competing and Unwanted Vegetation" Final Environmental Impact Statement (FEIS) has been completed. Any vegetation management work related to the Orchard EA projects would be in compliance with the requirements of these documents. Appropriate design criteria would be incorporated into any vegetation management project work to minimize potential adverse impacts to the environment, project workers, and public. The use of herbicides is not being proposed for any of the activities associated with the Orchard EA.

Site Specific Objectives for Site Preparation:

- Meet the recommended stocking levels within five years after harvesting (FW-380-381).
- Maintain conifer stocking at levels that would produce an economical commercial thinning at the earliest possible time.
- Meet the Mt. Hood Forest Plan Standards for minimizing soil erosion and compaction.
- Maintain adequate levels of downed woody debris and snags as required by the Mt. Hood Forest Plan and the Northwest Forest Plan.

Site Specific Objectives for Roads and Landing Related Slash and Vegetation:

- Vegetation control shall be completed along Forest roads to provide for user safety (FW-428).
- Vegetation and slash reduction work along roads shall be consistent with visual quality objectives (FW-430).
- Dead, down woody material loading levels shall be managed to provide for multiple resource objectives. Fuel profiles shall be identified, developed and maintained that contribute to the most cost effective fire protection program consistent with Management Area objectives (FW-263 and FW-265).

Site Specific Objectives for Managing Noxious Weed Populations:

- Minimize the spread and/or introduction of "A" and "B" rated weeds (see Mt. Hood National Forest Noxious Weed Management Plan, 1/1990) due to project activities.

### Expected Site Conditions

Site conditions do exist that favor the presence of both competing vegetation and slash immediately after felling of the overstory. All of the unit would likely require treatment to ensure establishment of seedlings and reduce fuel hazards.

Site conditions do exist that favor the presence of slash from newly constructed roads and other vegetative debris created during road maintenance or other reconstruction projects. Treatment of road

related slash and vegetation would be needed to meet the safety needs, visual quality and fuel management objectives.

The potential for the introduction of noxious weed seeds with this project due to contaminated straw, mulch or grass seed is minimal. Standard practices emphasize "weed-free" seed mixes, mulch and straw products. Since this project occurs along a closed road, the potential for noxious weed spread from passing motorists is minimal. Disturbed areas will be seeded and mulched with weed-free products. Noxious weeds within the Project area include *Cytisus scoparius* (scotch broom), *Cirsium arvense* (Canada thistle), *Cirsium vulgare* (bull thistle), *Senecio jacobaea* (tansy), and *Hypericum perforatum* (St. Johnswort). The Mt. Hood National Forest maintains a cooperative program with the Oregon Department of Agriculture regarding the prevention and control of weeds.

Damage thresholds for post-treatment/preplanting:

1. Greater than 20% cover of live vegetation.
2. Less than 350 well-distributed planting spots per acre.
3. Greater than 15 tons/acre of slash in the 0-3" size class.

Damage thresholds for road projects:

1. Vegetation that impedes upon a safe site distance.
2. Slash or vegetative debris created by the project that does not meet the assigned visual quality standard.
3. Greater than 15 tons/acre of slash in the 0-3" size class adjacent to the road.

Damage thresholds for "A" and "B" rated noxious weeds:

1. Risk of spread or introduction of noxious weeds, caused by the project activity, is "moderate to high".

The stand proposed for site preparation treatment is expected to need treatment of both live vegetation and slash so that management objectives can be attained. Past experience in this area shows that if trees are established immediately after site preparation, no release treatments from competing brush are required to meet the stand growth objectives. Road construction, reconstruction and maintenance projects are expected to need treatment of both live vegetation and slash so that management objectives can be attained. It is expected that management activities associated with this project would maintain a "low" risk of spreading or introducing noxious weeds through design criteria associated with the project.

## STRATEGY SELECTION

Five strategies for controlling unwanted vegetation are identified in the FEIS and Exhibit A of the Mediated Agreement. These are prevention, early treatment, maintenance, correction and no action. Based on the management objectives, site-specific conditions, the identified damage thresholds, and harvest prescriptions, these strategies were considered and the appropriate treatment methods was selected. The prevention, correction and no action strategies were identified as options to examine for this project.

No Action Strategy (All projects where damage thresholds are not exceeded)

"No Action" means that no activity interfering with natural processes on the site will be undertaken. It is the appropriate strategy anytime you have no evidence to support a prediction that competing or unwanted will exceed the damage threshold of a site. For the site preparation project, the no action strategy was not analyzed further because establishment of a healthy vigorous conifer stand cannot be

obtained without some disturbances to the overstory for most of the treatment area, and natural processes would not meet desired time frame. For the site preparation and road projects, it will be used if there are areas that do not exceed the damage thresholds previously identified and would not require treatment.

#### Prevention Strategy (Noxious Weeds)

The prevention strategy does not directly treat competing or unwanted vegetation. It detects and ameliorates the conditions that cause or favor the presence of competing or unwanted vegetation. To be effective, a prevention strategy has to be instituted before potentially competing or unwanted vegetation reaches the damage threshold.

The prevention strategy is the selected strategy for noxious weeds. Design criteria incorporated into the project are expected to minimize the spread of existing populations and the introduction of new populations. This strategy would keep noxious weed encroachment below the damage threshold for the project related activities.

For site preparation and the road projects, the prevention strategy is not immediately possible due to existing conditions, but should be considered as a long-term strategy in the vegetation prescription.

#### Correction Strategies (Site preparation and Roads)

Vegetation management action is necessary due to current site conditions that would not allow establishment of a new conifer stand. Correction treatment methods would remove the infected western hemlock overstory and competing vegetation to below the damage threshold, thus preparing the site for reforestation. Felling, bucking, grapple piling and burning are considered feasible and reasonable effective treatment methods in the analysis area.

Manual felling - this method would target cutting and bucking infected overstory western hemlock trees and suppressed trees. This would make available growing space for conifer regeneration.

Grapple Piling and Burning - This method would use a track mounted vehicle with a grapple-type device to pile a large portion of the slash. It would also be used to pull out the larger live vegetation and pile it with the slash. Grapple piling is a very effective corrective method on sites with less than 30% cover of larger vegetative plants such as vine maple or rhododendron. This method would reduce the levels of the large live vegetation and the dead woody debris to levels below the damage thresholds.

Site preparation combined with prompt reforestation, will in most cases, alleviate the need for any further conifer release treatments (long-term "prevention" strategy).

For road projects, the correction strategy is selected when the damage thresholds are exceeded. The following methods would be used where needed:

Lop and Scatter - this method would entail manually cutting the slash or brush with chain saws and then scattering it outside the road prism.

Piling and Burning - this method would use mechanical equipment to pile the slash. The piles would then be burned under a set of prescribed weather conditions.

Chipping/mastication - this method would use a track-mounted vehicle with a masticating-type device or chipper to remove the roadside vegetation that is encroaching into the road prism.

## EFFECTS OF ACTION ALTERNATIVES

The potential effects of the above treatments that have been considered include soil compaction, puddling, surface erosion, consumed coarse woody debris, removal of surface organic matter, overheating the soil, scorch or death of reserve trees, air quality degradation and the potential for an "escape" becoming a wildfire. A more complete discussion of the effects on these resources can be found elsewhere in this EA and in the appendix.

Adverse impacts would be prevented or minimized by the proper use of equipment, project supervision, training, the seasonal timing of activities, the development of a site specific burn plan, and the incorporation of appropriate design criteria.

The No-Action Alternative would not treat any unwanted vegetation. It would also result in the continuation of severe stand stagnation and continued competition with rhododendrons that is occurring in unit 2B.

### **I. Air Quality**

#### Mt. Hood Forest Plan References

Forestwide Air Quality Standards and Guidelines - FW-39 to FW-53, page Four-51

See Mt. Hood FEIS pages IV-19, and IV-155 to IV-167

#### Effects of Alternatives

The fuel treatment methods considered in the project area may temporarily affect local air quality. Prescribed burning has the potential to degrade air quality for short periods of time. The principal impact to air quality from prescribed burning is the temporary visibility impairment caused by smoke to the recreational Forest users. Past experience has shown that air quality declines are limited in scope to the general burn area and are of short duration. The effects on air quality should be minimal due to the burning being scheduled in the spring (March - June) or fall (October - December) or during periods of inclement weather.

Areas of highest concern for possible impacts to air quality are:

Portland-Vancouver Metropolitan Area  
Mt. Hood Wilderness  
Bull of the Woods Wilderness  
Salmon-Huckleberry Wilderness  
Mt. Jefferson Wilderness

To protect visibility in Class I areas, prescribed burning would be restricted from July 4 weekend to September 15. All prescribed burning would be scheduled in conjunction with the State of Oregon to comply with the Oregon Smoke Implementation Plan to minimize the adverse effects on air quality.

Burning would be conducted when smoke dispersion conditions are favorable to minimize the potential for adverse effects.

### Human Health Effects From Smoke

Health risks are considered greater for those individuals (workers and others) in close proximity to the burning site. Particulate matter is measured in microns and calculated in pounds per ton of fuel consumed. Particulate matter that is 10 microns or less in size are those that create the greatest health risk. At this size the material can move past normal pulmonary filtering processes and be deposited into lung tissue. Particulates larger than 10 microns generally fallout of the smoke plume a short distance down range.

Members of the public are generally not at risk. Few health effects from smoke should occur to Forest users due to their limited exposure. Warning signs and public notices should serve to notify Forest users of areas with activity so they may avoid those areas. Due to the distance involved and the season of the burn, strong inversions are unlikely to develop and hold a dense smoke plume to adversely affect residents.

## **J. Heritage Resources**

### Mt. Hood Forest Plan References

Forestwide Timber Management Standards and Guidelines - FW-598 to FW-626, page Four-118  
See FEIS page IV-149 and IV-155 to IV-167

Surveys have been conducted for this project (heritage resource report number 99-05-03). Blaze trees associated with an abandoned trail would be marked as leave trees in Unit 1. There are no anticipated effects on heritage resources. The project contracts would contain provisions for the protection of sites found during project activities.

## **K. Scenery**

### Mt. Hood Forest Plan References

Forestwide Visual Resource Management Standards and Guidelines - FW-552 to FW-597, page Four-107-109.

Scenic Viewsheds Standards and Guidelines - B2-12 to B2-42, page Four-221

See Mt. Hood FEIS pages IV-127, IV-131, IV-142, and IV-155 to IV-167

### Existing Situation

The roads within the project area are closed. The area is not seen from any primary viewing positions. A Visual Quality Objective (VQO) of Modification is prescribed. Proposed harvest areas can be seen from other open roads that also carry a VQO of Modification.

### Effects

Under Alternative A there would be no change to the scenery. In all the action alternatives the Visual Quality Objective of Modification would be met. Since the proposed action is primarily thinning, there would be little or no effect to scenery. Alternatives B, D, and E include temporary road construction,

ground based logging, and skyline logging. The roadways, skidtrails, and yarding corridors would have an impact on scenery, though the Forest Plan standard of Modification would still be met.

Under Alternative C there are no new roads, far fewer acres of tractor and skyline logging, and far fewer skidtrails and yarding corridors. Most of the logging would be done by helicopter, resulting in minimal impacts to the scenery

## **L. Other**

### **1. Wind**

Existing Situation - The silvicultural report in the appendix contains information about past wind history. The South Fork Clackamas Watershed Analysis contains a wind analysis and recommendations (page 4-1). In the past blowdown has been associated with new edges created by clearcutting. Several thinning projects similar to the one proposed and in the same drainage have successfully stood the test of time. The trees there are continuing to improve in vigor and root strength as planned.

Effects - Since there is a concern about wind damage, the action alternatives have been designed to minimize risk. The thinning prescription incorporates a relatively light thin to enhance tree strength. The prescription includes recommendations such as not creating patch openings in areas susceptible to blowdown, (Patch openings are sometimes added to thinnings to enhance diversity and create forage for wildlife.) retaining trees with the largest diameters, leaving no-cut buffers along some adjacent plantations, and feathering the tree density in certain areas. Minor quantities of blowdown are anticipated and would contribute to the levels of down woody debris that are required for diversity and productivity. Without some blowdown, standing trees would be felled to meet this need. In the long term, thinning would result in increased root and stem strength, improved health and stability and improved windfirmness.

With the no-action alternative, trees would grow too long in an overcrowded condition. They would compete with each other to gain height at the expense of diameter and root strength and in the long term, they would become increasingly susceptible to wind damage.

### **2. Fragmentation**

Existing Situation - The South Fork Clackamas River Watershed Analysis (pages 2-36 to 2-78) contains an in-depth analysis of fragmentation. It is late-successional forest fragmentation and late-successional connectivity that are addressed. Late-successional forests were the focus of the Northwest Forest Plan. The project area contains second-growth stands.

Effects - The action alternatives do not affect late-successional forest and they do not contribute to fragmentation. They also do not affect any areas identified in the watershed analysis (Map 3-1 and 3-3) or LSR assessment (pages 3-66 to 3-80) as being a concern for connectivity or biological corridors. The four acres of regeneration in unit 2B are also second growth and would not contribute to late-successional forest fragmentation. All of the alternatives are similar in terms of their lack of effect on fragmentation and connectivity.

3. Effects upon minority groups, women, and civil rights (Secretary Memorandum 1662, Supplement 8 and MOB Circular A-19, see also FSM 1730): Minority groups and women would benefit to the extent that they would be able to participate in additional employment generated by the projects.
4. Environmental justice - Executive Order 12898. Projects would not disproportionately adversely affect minority or low-income populations.
5. The effects to recreational fisheries would be minimal because fish habitat conditions downstream would not be detrimentally affected and because the roads in the project area are not used by fishers to access fish bearing streams. Access to streams for angling is not altered by any of the action alternatives.
6. There would be no effect upon prime farmland or prime rangeland.
7. No flood plains or wetlands are affected by the alternatives.
8. There are no identified conflicts between the proposed action and Federal, Regional or State laws; local land use plans or policies.
9. The relationship between short-term uses and the maintenance of long-term productivity; no reductions in long-term productivity are expected. See soils section.
10. Irreversible and Irretrievable Commitments. The use of rock for road surfacing is an irreversible resource commitment.

## **CHAPTER IV. - CONSULTATION WITH OTHERS**

### List of Other Agencies Consulted

U.S. Fish and Wildlife Service	City of Estacada
National Marine Fisheries Service	City of Gresham
Oregon Historic Preservation Office	City of Lake Oswego
Confederated Tribes of Warm Springs	City of Gladstone
Confederated Tribes of Grande Ronde	City of Oregon City
Yakima Indian Nation Tribal Council	City of West Linn
Bonneville Power Administration	Clackamas County
Northwest Power Planning Council	Oregon Department of Transportation
Clackamas River Water	Oregon State Parks
South Fork Water Board	Oregon Department of Forestry
Oak Lodge Water Board	Oregon Department of Fish and Wildlife
Mt. Scott Water District	Oregon Division of Lands
Bureau of Land Management	Oregon Marine Board
Metro	Eagle Creek National Fish Hatchery
Clackamas River Basin Council	Environmental Protection Agency

The publication "Sprouts" is a quarterly newsletter sent out by the Mt. Hood National Forest to notify interested people, organizations, and other agencies of proposed projects and solicit comments on them. This project appeared in the spring and summer 1998 issues. A letter describing the project and requesting comments was sent out to a district mailing list of 217 agencies, organizations and individuals.

From these public involvement efforts, several letters were received. They are in the appendix. Several of the comments expressed concern about fisheries, water quality, road construction, coarse woody debris, economics and regeneration. These comments were considered during the development of the issues, alternatives and project design. A complete synopsis of the comments and responses is included in an appendix to this EA.

## **CHAPTER V. - LIST OF PREPARERS**

Jim Roden	Writer Editor
Jeanne Rice	Silviculture
Robert Penson	Wildlife
Sharon Hernandez	Wildlife
Gale Masters	Botany
Terry Brown	Fuels
Dave Radetich	Transportation
Tim Shibahara	Fisheries
Bob Bergamini	Fisheries
Tom Deroo	Geologist
Jim Roden	Logging Systems / Economics

## Appendix 1 – Response to Comments

The following is a summary of comments. The signing of a decision notice and subsequent project implementation have been delayed due to court cases that have since been resolved. Updates were made to the original EA based on comments and new requirements.

### Wind

1. Concern: Thinning will increase the potential for blowdown. The EA does not seem to reflect full recognition of the blowdown prone nature of this location. Design the thinning to minimize blowdown especially in the riparian reserve.

Response: The silvicultural report in the appendix contains information about past wind history and the features of the thinning prescription that minimize wind risk while improving windfirmness. The updated EA has a new section elaborating on that wind analysis.

As stated in the purpose and need, thinning is designed to provide long-term health and stability. If trees are allowed to grow too long in an overcrowded condition they compete with each other to gain height at the expense of diameter and root strength. Thinning would give the trees a chance to develop greater trunk and root strength and in the long-term would result in larger healthier trees that can withstand wind.

### Owls/LSR/T&E

2. Concern: A road should not be built in the LSR because it will harm spotted owls and degrade the quality of the LSR.

Response: The Northwest Forest Plan page C-16 indicates that new roads in the LSR should be kept to a minimum, routed through non-late-successional habitats where possible, and designed to minimize adverse impacts. Alternatives B and D would build a temporary road from the end of road 4500-242 into unit 1. All of road 4500-242 and approximately 200 feet of the new temporary road are in the LSR. The analysis shows that the temporary road would have a neutral affect to the LSR. The proposed temporary road passes through a second-growth stand that has already been thinned. The road does not pass through late-successional habitat, it would be kept as narrow as possible, and the trees that would need to be cut would be left for coarse woody debris. The new road (plus  $\frac{3}{4}$  mile of existing road that lead up to this new road, also in the LSR) would be obliterated and revegetated after project completion. In addition, alternatives C and E were developed to explore other options such as helicopter logging and building a longer road on steep slopes that avoids the LSR.

3. Concern: The LSR is not fully functional because of past logging. There should be no logging adjacent to the LSR until it recovers.

Response: It was known at the time the LSRs were created that there was fragmentation of mature habitats and that there was an inclusion of second-growth forests. The LSRs were made large enough to compensate for this. The LSR assessment contains information on LSR habitats and connectivity between LSRs (LSR assessment pages 3-7 to 3-19 and 3-66 to 3-80). There were no recommendations to manage adjacent stands in the Orchard area differently. The proposed action does not fragment mature habitats.

4. Concern: The EA does not adequately address the needs of endangered species. The EA does not adequately address the needs of the northern spotted owl.

Response: Biological evaluations are in the appendix. Biological Opinions and Letters of Concurrence have been received from the U.S. Fish and Wildlife Service and National Marine Fisheries Service. They found the level of information adequate and concurred with the determination of not likely to adversely affect or less for all species.

5. Concern: The project would degrade spotted owl dispersal habitat. Claims of long-term benefit to owls are not supported by validating data.

Response: The biological evaluation states that spotted owl dispersal habitat would be degraded. Dispersal habitat is not in short supply. The degradation of dispersal habitat is a short-term affect while in the long term, thinning would create larger trees. Certified silviculturists and biologists have made these judgments based on analysis and professional judgment. The Northwest Forest Plan recognized the desirability of thinning second growth and even recommends it for LSRs (Page C-12). This information is documented in the LSR assessment (page 6-16).

## **Riparian/Water**

6. Concern: There should be no thinning in the riparian reserves because it will harm water quality. It will violate Aquatic Conservation Strategy (ACS) objectives. It will harm a rare aquatic lichen.

Response: The project was designed to protect water quality. The Water Quality Coordinator for the South Fork Water Board has reviewed the EA and made field inspections. Suggestions have been incorporated and he has concluded in a letter to the files that the timber sale “should not have any adverse affect on the water quality in the Clackamas River.”

The Northwest Forest Plan (page C-32) indicates that timber harvest is appropriate in riparian reserves where silvicultural practices are designed to control stocking and acquire desired vegetation characteristics to attain ACS objectives. Thinning in riparian reserves would improve stand health and vigor and would result in larger trees and a stand with greater diversity, all of which meet ACS objectives. A document elaborating consistency with the ACS objectives is in the appendix and summarized in ea. The aquatic lichen has been removed from the survey and manage list: it was adequately protected with all alternatives

but is no longer a species of concern. Alternative D was developed to display the option of thinning by girdling in the riparian reserve without logging to remove the trees.

## Other

7. Concern: There should be no road construction. The Forest already has too many roads.

Response: The temporary roads are proposed to access landings for tractor and skyline logging. The roads would be built on gently sloping stable landforms and would cross no streams. They would be obliterated and revegetated upon completion of the project. Alternative C was specifically developed to address this concern. There would be no road construction with alternative C. All of the action alternatives propose to obliterate and revegetate road 4500-242.

8. Concern: All surveys for survey and manage species should be conducted including for red tree voles.

Response: Surveys have been conducted for red tree voles and all other species that require pre-disturbance surveys according to regional protocol. No red tree voles were found. Common species are present but no rare or uncommon species that require the management of known sites were found. Refer to the Survey and Manage Plan and the Annual Species Review.

9. Concern: There should be an alternative that includes no road building (as in Alternative C) and no riparian thinning (as in alternative D). There should be a restoration only alternative that recognizes that the primary role of the matrix is “to perform an important role in maintaining biodiversity.” This role of matrix is ignored in the EA.

Response: The decision maker could select a modified alternative like the one suggested.

The quotation concerning the role of biodiversity in matrix is an incomplete quote from page B6 of the Northwest Forest Plan. The complete text states, “Stands in the matrix can be managed for timber and other commodity production, and to perform an important role in maintaining biodiversity. Silvicultural treatment of forest stands in the matrix can provide for retention of old-growth ecosystem components such as large green trees, snags and down logs, and depending on site and forest type, can provide for a diversity of species. Retention of green trees following timber harvest in the matrix provides a legacy that bridges past and future forests.” The alternatives have been designed to incorporate these standards and guidelines for matrix.

10. Concern: There should be no logging on the National Forest. Forests left alone are healthier.

Response: The management direction for this area is contained in the Mt. Hood Forest Plan. Ending logging on the National Forest is beyond the scope of this analysis. Discussions for the No-action alternative show the health situation for forests left alone.

11. Concern: The EA is inadequate because there is no mention of population studies as required in 40 CFR 1502.24.

Response: 40 CFR 1502.24 applies to Environmental Impact Statements. It refers to methodology and scientific accuracy, not population studies.

12. Concern: The EA lacks a habitat fragmentation analysis and an evaluation of the project's effects on biological corridors.

Response: The South Fork Clackamas River Watershed Analysis (pages 2-36 to 2-78) has an in-depth analysis. It is late-successional forest fragmentation and late-successional connectivity that are addressed. The proposed action does not affect late-successional forest. The proposed action involves second growth and does not contribute to fragmentation. It also does not affect any areas identified in the watershed analysis (Map 3-1 and 3-3) or LSR assessment (pages 3-66 to 3-80) as being a concern for connectivity or biological corridors. The updated EA has a new section elaborating on fragmentation.

13. Concern: The EA does not follow proper procedures under the Northwest Forest Plan with respect to the regeneration harvest of unit 2B.

Response: There is no harvest proposed for unit 2B. This 4-acre area would have most of the small trees felled and the site would be prepared for planting with a grapple-piling machine (EA page 6). The applicable standards for regeneration treatments such as green tree retention and down woody debris are being followed. All other procedures such as a vegetative site analysis and NFMA compliance have also been followed.

14. Concern: The EA does not address the cumulative impacts of logging on adjacent private property.

Response: The EA has addressed cumulative impacts. There is no adjacent private property. The adjacent BLM lands have been included in the cumulative effects analysis.

15. Concern: The EA does not address indirect effects such as migratory songbirds that may use the area.

Response: Habitat for migratory birds is provided by the maintenance of a diversity of habitats at the landscape level and by the retention and creation of snags at the local level. Management practices on the Mt. Hood National Forest provide for a wide diversity of habitat types and the retention of snags (Pages Four-67 and Four-74). The watershed analysis (South Fork Clackamas, pages 2-50 and 2-66) describes landscape patterns and the snag habitat situation for several species including migratory birds. In the Orchard units, snags will be retained at the 100% biological potential level. The proposed thinning may affect migratory birds that rely on unthinned second growth, however in the watershed there are many acres of unthinned second growth in the LSR that will provide for these species (watershed analysis maps 1-4 and 2-10).

Executive Order 13186 (1/10/2001) directed agencies to develop a memorandum of understanding within two years with the U.S. Fish and Wildlife Service to develop protocols for the analysis of migratory bird habitat. That process is not yet completed.

16. Concern: The project is a below-cost sale and should not proceed.

Response: Thinning sales often have marginal economics. They remove the smallest least valuable trees, they have low volume per acre, and they often need expensive logging systems and road construction to access the landings. The objectives of improving health and growth would provide intangible benefits for a wide range of resources. Market conditions have improved recently. Alternatives A and C have a benefit/ratio below 1 and the others are above 1.

## Appendix 2 – Other Documents

- A. Silviculture
- B. Public Involvement
- C. Botany
- D. Biological Assessment – Fish
- E. Concurrence Letter – National Marine Fisheries Service
- F. Concurrence Letter – Cutthroat Trout - U. S. Fish and Wildlife Service
- G. Wildlife
- H. Concurrence Letter – Wildlife - U. S. Fish and Wildlife Service
- I. Economic Analysis
- J. Heritage Resources
- K. Roads Analysis