



United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Tillamook Resource Area Office
4610 Third Street
Tillamook, OR 97141

IN REPLY REFER TO:

1790 (086)

EA No. OR-086-04-02

June 8, 2004

Interested Public:

The BLM (Bureau of Land Management) is proposing to implement Alternative 1 which was analyzed in EA (Environmental Assessment) Number OR-086-04-02. This alternative entails a variable density management thinning on 160 acres of 47- to 83-year-old dense, pure, and uniform Douglas-fir stands primarily within the Willamina Creek watershed. The project area is located on federal land in portions of Township 4 South, Range 7 West, Sections 23, 24, 36, and Township 4 South, Range 6 West, Sections 9, 10, 31, Willamette Meridian

Enclosed for your inspection are the EA and FONSI (Finding of No Significant Impact). **I encourage you to provide substantive comments in writing regarding this proposed decision and FONSI on or before July 9, 2004 to the Tillamook Field Manager at the above address.** Comments received will be considered in making the final decision for this action.

Comments, including names and addresses of those who comment, will be considered part of the public record and will be available for public inspection. Also, names of those who comment may be published as an addendum to the EA. Individual respondents may request confidentiality. If you wish to withhold your name or street address from public review or from disclosure under the Freedom of Information Act, you must state this prominently at the beginning of your written comment. Such requests will be honored to the extent allowed by law. All submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, will be made available for public inspection in their entirety.

For additional information, contact me at the above address or telephone (503) 815-1100.

Sincerely,

/s/ Katrina Symons

Katrina Symons
Tillamook Field Manager

**ENVIRONMENTAL ASSESSMENT
and
FINDING OF NO SIGNIFICANT IMPACT**

Stoned Gopher Density Management Thinning

Environmental Assessment Number OR-086-04-02
June 4, 2004

United States Department of Interior
Bureau of Land Management
Oregon State Office
Salem District
Tillamook Resource Area
Yamhill County, Oregon

Responsible Agency:	Bureau of Land Management
Responsible Official:	Tillamook Field Manager Tillamook Resource Area 4610 Third Street Tillamook, OR 97141 (503) 815-1100

Abstract: The Bureau of Land Management proposes to conduct variable density management thinning of approximately 160 acres within the Adaptive Management Area and Riparian Reserve land use allocations. This action would occur on federal land in portions of Township 4 South, Range 7 West, Sections 23, 24 and 36, and Township 4 South, Range 6 West, Sections 9, 10 and 31, Willamette Meridian.

This environmental assessment discloses the predicted environmental effects of two alternatives: Alternative 1 (Proposed Action) and Alternative 2 (No Action). The Proposed Action would be implemented through the commercial sale of timber in September 2004.

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FINDING OF NO SIGNIFICANT IMPACT

Based upon review of the EA (Environmental Assessment Number OR-086-04-02) and supporting project record, I have determined that Alternative 1 (Proposed Action) is not a major federal action and would not significantly affect the quality of the human environment, individually or cumulatively with other actions in the general area. No environmental effects meet the definition of significance in context or intensity as defined in 40 CFR 1508.27. Therefore, an environmental impact statement is not needed. This finding is based on the following discussion:

Context. The Proposed Action is a site-specific action directly involving 160 acres of BLM (Bureau of Land Management) administered land that by itself does not have international, national, region-wide, or state-wide importance. The Proposed Action is located within the Adaptive Management Area and Riparian Reserve land use allocations, and within the Willamina Creek and Deer Creek watersheds, both tributaries to the South Yamhill River.

The discussion of the significance criteria that follows applies to the intended action and is within the context of local importance. Chapter 3 of the EA details the effects of the Proposed Action. None of the effects identified, including direct, indirect and cumulative effects, are considered to be significant and do not exceed those effects described in the *Salem District Resource Management Plan/Final Environmental Impact Statement* (September 1994).

Intensity. The following discussion is organized around the Ten Significance Criteria described in 40 CFR 1508.27.

1. Impacts may be both beneficial and adverse. The predicted environmental effects of the Proposed Action, most noteworthy, include: 1/ Rapid development of some late-successional forest structural features, including larger-sized trees, gaps in the canopy, snags and down logs, various levels of overstory tree densities, and various levels of understory development; 2/ Social and economic benefits to local communities through the supply of merchantable timber to local mills; 3/ Slight increase in invasive/non-native weeds in the short-term, however these species are not predicted to persist in the long-term as most are not shade tolerant; 4/ Increase in the amount of impermeable surface in the watershed by up to 18 acres; 5/ Slight potential of sediment input to streams along proposed haul routes that “may effect, but is unlikely to adversely effect” Upper Willamette steelhead; 6/ Modification of 160 acres of spotted owl dispersal habitat, however these acres would still be in a condition

to function as dispersal habitat post harvest; 7/ Potential for disturbance to northern spotted owls, marbled murrelets, and bald eagles (see significance criteria #9 below); and 8/ No potential of negative impacts (result in the elevation of their status to any higher level of concern including the need to list under the ESA) to any of the wildlife, plant or fish Special Status Species, not including threatened/endangered species. None of the environmental effects disclosed above and discussed in detail in Chapter 3 of the EA are considered significant.

2. **The degree to which the selected alternative will affect public health or safety.** Public health and safety would not be affected. The Proposed Action is comparable to other density management thinning projects which have occurred within the Tillamook Resource Area with no unusual health or safety concerns.
3. **Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farm lands, wetlands, wild and scenic rivers, or ecologically critical areas.** There are no historic or cultural resources, park lands, prime farm lands, wetlands, wild and scenic rivers or wildernesses located within the project area.
4. **The degree to which the effects on the quality of the human environment are likely to be highly controversial.** The effects of the Proposed Action on the quality of the human environment are adequately understood by the interdisciplinary team to provide analysis for the decision. A complete disclosure of the predicted effects is contained in Chapter 3 of the EA.
5. **The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.** The Proposed Action is not unique or unusual. The BLM has experience implementing similar actions in similar areas and have found effects to be reasonably predictable. The environmental effects to the human environment are fully analyzed in Chapter 3 of the EA. There are no predicted effects on the human environment which are considered to be highly uncertain or involve unique or unknown risks.
6. **The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.** The Proposed Action does not set a precedent for future actions that may have significant effects nor does it represent a decision in principle about future consideration. The Proposed Action accelerates the development of some late-successional forest habitat characteristics on 160 acres of land managed by the BLM. Any future projects would be evaluated through the NEPA (National Environmental Policy Act) process and would stand on their own as to environmental effects.
7. **Whether the action is related to other actions with individually insignificant but cumulatively significant impacts.** The interdisciplinary team evaluated the Proposed Action in context of past, present and reasonably foreseeable actions. Significant cumulative effects are not predicted. A complete disclosure of the effects of the Proposed Action is contained in Chapter 3 of the EA.

8. The degree to which the action may adversely affect districts, sites, highways, structures, or other objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources. The Proposed Action would not adversely affect districts, sites, highways, structures, or other objects listed in or eligible for listing in the National Register of Historic Places, nor would the Proposed Action cause loss or destruction of significant scientific, cultural, or historical resources.

9. The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973. The Proposed Action would result in the potential for disturbance to northern spotted owls, marbled murrelets, and bald eagles. Potential for disturbance to spotted owls would be during the critical and non-critical breeding seasons as there is unsurveyed suitable habitat within the vicinity of six of the eight harvest units and associated haul routes. The potential for disturbance to marbled murrelets is primarily due to hauling within the non-critical nesting period as all the suitable or potential murrelet habitat within 0.25 miles of treatment units was surveyed to protocol with no detections. There is a very slight potential for disturbance to bald eagles which may be utilizing suitable habitat in the vicinity of the treatment units or haul routes. Additionally, the proposed action would modify 160 acres of spotted owl dispersal habitat however these acres would still be in a condition to function as dispersal habitat post harvest. While no potentially suitable murrelet nest trees would be directly impacted, there is a slight potential that a few potentially suitable murrelet nest trees located within surveyed suitable or potential murrelet habitat situated directly adjacent to several of the treatment units could be impacted, either beneficially or adversely. The Stoned Gopher project was included within the programmatic habitat modification biological assessment prepared by the interagency Level 1 Team (terrestrial subgroup) for FY 2003-2004 projects within the North Coast Province which may modify the habitat of bald eagles, northern spotted owls and marbled murrelets (Biological Opinion *USFWS reference 1-7-02-F-958*) under the categories of “light to moderate thinning”.

The Proposed Action is not expected to have any adverse effects to Upper Willamette steelhead or their habitat. In accordance with regulations pursuant to Section 7 of the Endangered Species Act of 1973, as amended, informal consultation with NOAA Fisheries is anticipated to be initiated in June 2004.

10. Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment. The Proposed Action does not violate any known Federal, State, or local law or requirement imposed for the protection of the environment. Furthermore, the Proposed Action is consistent with applicable land management plans, policies, and programs (EA, Chapter 1.4).

ENVIRONMENTAL ASSESSMENT

CHAPTER 1.0 PROJECT SCOPE

1.1 Project Location

The project area is located approximately 14 miles west of McMinnville, Oregon, in Yamhill County on federal land managed by the Tillamook Resource Area, Salem District, BLM (Bureau of Land Management). The project area lies within the Willamina Creek and Deer Creek watersheds, both tributaries to the South Yamhill River, within portions of Township 4 South, Range 7 West, Sections 23, 24 and 36, and Township 4 South, Range 6 West, Sections 9, 10 and 31, Willamette Meridian (Figure 1).

The proposed density management thinning would occur within the AMA (Adaptive Management Area) and Riparian Reserves land use allocations, as identified in the RMP (*Salem District Record of Decision and Resource Management Plan*, May 1995).

1.2 Background

An Environmental Assessment, OR-086-98-01, was completed in August 1998 for the Willamina Creek Fish Habitat Enhancement and Stoned Gopher Density Management Thinning projects. Timber sale layout work occurred in Fiscal Year 1999; however the implementation of the density management thinning project was deferred due to a series of court rulings¹.

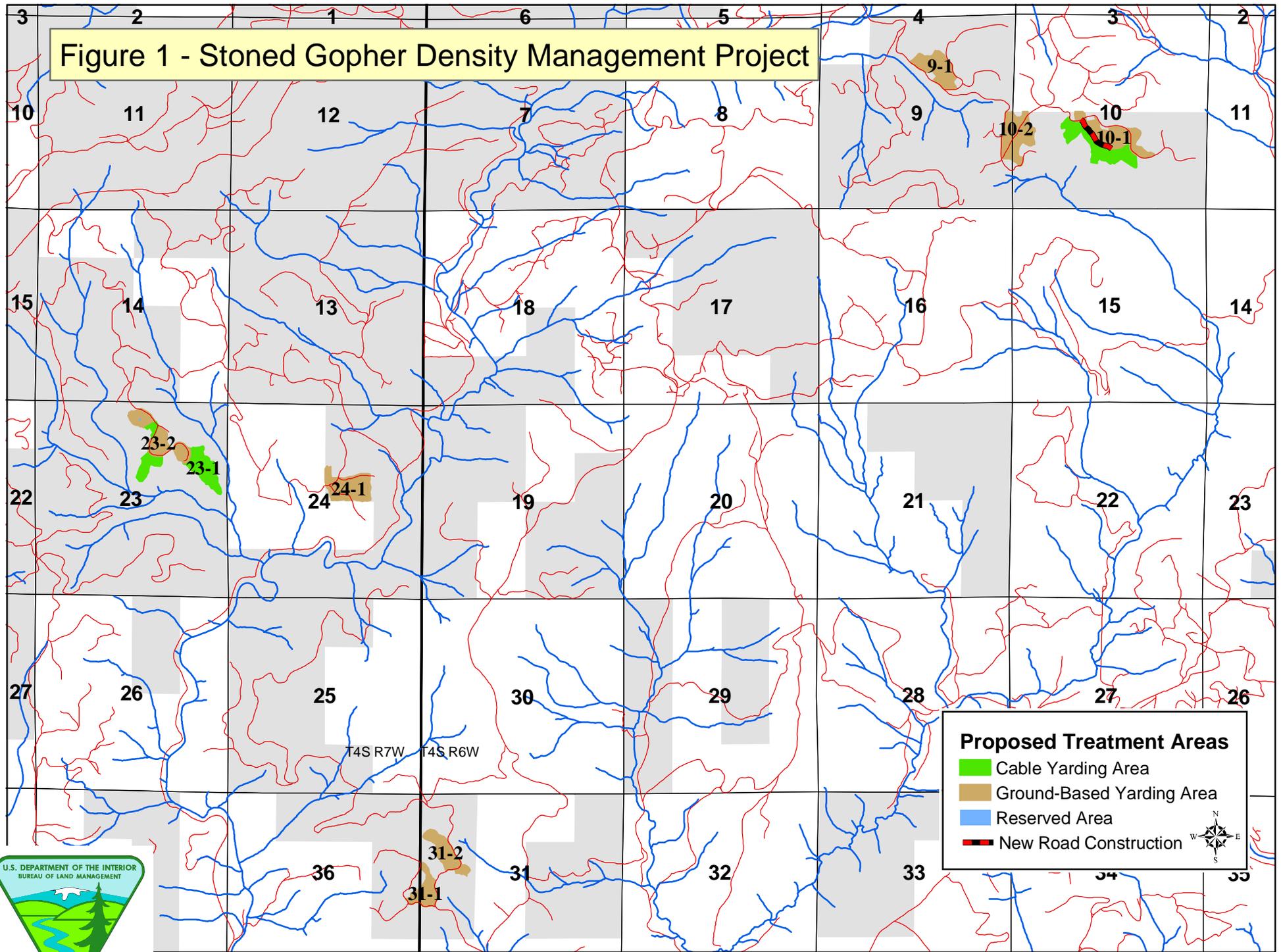
Subsequently the original density management thinning project has undergone review for consistency with agency policy and NEPA (National Environmental Policy Act) adequacy. Based upon this review a decision was made by the Tillamook Field Manager to modify the density management thinning project and to prepare a new environmental assessment.

1.3 Purpose of and Need for Action

The proposed treatment units are forested with 47 to 83-year-old timber which is predominately dense, uniform Douglas-fir although some stands are mixed with hardwoods (primarily red alder and big-leafed maple) and/or limited western redcedar, grand fir or western hemlock. The overstory canopy closure generally exceeds 80%. The average stand diameter in the 47- to 53-year-old stands is about 12 inches and in the 72- to 83-year-old stands it is about 19 inches (these diameters represents the stands when they were originally surveyed in 1998). The understory is nearly absent in the 47- to 53-year-old stands due to high stand density. In the 72- to 83-year-old stands, the shrub layer is fairly well developed as a result of the previous commercial thinning that occurred at least 25 years ago. All of the stands are generally deficient in CWD (both snags and downed logs).

¹ Oregon Natural Resources Council v. United States Forest Service and Bureau of Land Management, Civil No. 98-0942WD and Pacific Coast Federation of Fishermen's Association, et al. v. National Marine Fisheries Service.

Figure 1 - Stoned Gopher Density Management Project



0 1,000 2,000 4,000 Feet

The desired condition is one in which the treated stands have an increased rate of development of late-seral forest conditions. Specifically, the stands have increased tree diameter growth and crown development, stimulated understory shrub layer development, increased structural diversity of the overstory canopy, augmented CWD levels, and larger trees that could become sources of high-quality CWD habitat features – both snags and logs. Unit 10-1 has the additional desired condition of the development of a second conifer layer in selected patches.

Project objectives include:

1. Provide for a stable timber supply and social/economic benefits to local communities (RMP p. 19; Northern Coast Range Adaptive Management Area Guide p. 14).
2. Accelerate the development of some late-successional forest habitat characteristics (RMP p. 19; Northern Coast Range Adaptive Management Area Guide p. 49; Late Successional Reserve Assessment for Oregon's Northern Coast Range Adaptive Management Area pp. 86-87).

1.4 Conformance with Land Use Plans, Policies and Programs

The proposed action is in conformance with the RMP and tiers to the FEIS (*Salem District Proposed Resource Management Plan/Final Environmental Impact Statement*, September 1994).

The proposed action is also in conformance with the Northwest Forest Plan (*Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl and Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl*, April 1994); WA (*Deer Creek, Panther Creek, Willamina Creek, and South Yamhill Watershed Assessment*, May, 1998); AMA Guide (*Northern Coast Range Adaptive Management Area Guide*, January 1997); LSRA (*Late-Successional Reserve Assessment for Oregon's Northern Coast Range Adaptive Management Area*, January 1998); *Record of Decision and Standard and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines*, January, 2001; *Record of Decision Amending Resource Management Plans for Seven Bureau of Land Management Districts and Land and Resource Management Plans for Nineteen National Forests Within the Range of the Northern Spotted Owl, Decision to Clarify Provisions Relating to the Aquatic Conservation Strategy*, March 2004; S&M ROD (*Record of Decision to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines in Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl*, March 2004); Coastal Zone Management Act of 1974, as amended and ESA (Endangered Species Act of 1972, as amended).

1.5 Decision to be Made

The Tillamook Field Manager is the official responsible for deciding whether or not to prepare an environmental impact statement, and whether to approve the density management thinning project as proposed, not at all, or to some other extent.

CHAPTER 2.0 ALTERNATIVES

Since there were no unresolved conflicts concerning alternative uses of available resources identified by the interdisciplinary team, there was no procedural requirement to develop additional action alternatives (Appendix 1). As such, the alternatives that will be analyzed in detail in this EA include the “proposed action” and “no action” alternatives.

2.1 Alternative 1 (Proposed Action)

The proposed action is to conduct a variable density management thinning in eight treatment units totaling approximately 160 acres on federal land previously described in Chapter 1.1. The action is anticipated to be implemented in September 2004 through the commercial sale of timber. A combination of ground-based and cable yarding would be used. In addition 0.2 miles of road would be constructed and decommissioned at project completion. Treatment information by unit is summarized in Table 1.

Table 1. Treatment Unit Information. This table summarizes the treatment unit information associated with the Stoned Gopher density management thinning proposal.									
Unit	Mean Stand Age	Total Acres	Ave. Slope (%)	Logging System	Average DBH	Relative Density		Trees per Acre	
						Pre-harvest	Post-harvest	Pre-harvest	Post-harvest
9-1	83	15	25	Ground	18.7	60	40	137	74
10-1	51	44	35	Cable -22 ac Ground – 22 ac	12.5	76	35	318	92
10-2	72	20	25	Ground	19.0	57	40	126	82
23-1	72	17	25	Cable -13 ac Ground – 4 ac	18.1	63	40	148	76
23-2	52 72	20	25	Cable -6 ac Ground – 14 ac	11.4 18.1	67 63	32 40	318 148	105 76
24-1	53	18	15	Ground	13.0	75	38	295	105
31-1	47	10	15	Ground	13.1	60	32	230	90
31-2	47	13	15	Ground	13.1	60	32	230	90
		157							

Density management thinning and the associated road actions would be conducted in such a manner as to assure that associated impacts will not exceed those allowed under the Best Management Practices identified in the Salem RMP (Appendix C-1 through C-6). Project-specific design features follow:

Thinning Outside Riparian Reserve

Conduct a variable density thinning in all treatment units to Relative Density levels of 32-40, with an emphasis in retaining the larger-diameter conifers with relatively high live crown ratios and healthy appearing crowns, even at the expense of spacing.

Due to high disease levels of *Phellinus weirii* in treatment unit 31-1, less susceptible conifers and hardwoods (all hardwood are already reserved) would be favored for retention over Douglas-fir or grand fir. If disease tolerant trees are not present, one-tree spacing would be left from symptomatic Douglas-fir trees, where possible. In the southern one-half of this unit, all standing Douglas-fir and grand fir trees would be removed within one-tree spacing around the edges of two to three of the larger *P. weirii* root rot disease-caused openings. These areas would be reforested with disease-resistant conifers and/or hardwoods such as western redcedar and bigleaf maple.

In treatment unit 10-1, two 2-acre and two 1-acre patch cuts (6 total acres) would be created and would contain ten of the largest, most windfirm Douglas-fir trees per acre as individual trees and in scattered clumps of two to three trees. These patch cuts may include all of a portion of the spur road and/or landing associated with the spur road. In the 2-acre patch cuts, three to four additional trees per acre would be converted to snags or felled to augment CWD after the timber sale was completed. These patch cuts would be planted with a mixture of trees, such as Douglas-fir, grand fir, western redcedar, and/or bigleaf maple, to form a second canopy layer. The more shade-tolerant conifers (grand fir and western redcedar) would be planted primarily where they would receive shade from the residual overstory trees.

Retain and protect to the greatest extent possible green trees with characteristics desirable to wildlife (broken or forked tops, hollow cavities, large limbs), all hardwoods (to protect the current diversity of the treated stands), all existing snags with the exception of those necessary to cut for reasons of safety, and all existing downed logs. Existing snags greater than 24 inches DBH (diameter at breast height) would be surrounded with two or more leave trees to help protect them from logging damage.

Unthinned clumps of about ten Douglas-fir trees at the rate of one such clump per two acres in the 47- to 53-year-old stands, and clumps of about five Douglas-fir trees at the rate of one such clump per two acres in the 68- to 83-year-old stands would be retained to add to the general diversity of the area and to serve as potential sources of CWD (both snags and downed logs) as some of these trees naturally die of suppression. Two or more conifers spaced 10-feet or less apart at the rate of approximately two such "groups" per acre would also be reserved within all treatment units. When evaluated and if appropriate, one of these trees could be converted into a snag thus creating a "protected" snag for use by wildlife.

Prior to entering the sale area each work season, or before returning to the watershed after leaving it, any heavy machinery (with the exception of log trucks and pick-up trucks used for daily personnel travel) will have all dirt and adhering vegetation cleaned from it to avoid introducing or spreading noxious weeds and/or invasive plant species.

Riparian Reserves

The RR (Riparian Reserve) boundary is one site-potential tree height (varies from 200 to 220 feet for the units planned for treatment) on each side of streams that do not contain fish (mostly intermittent streams) and two site-potential tree heights in width on each side of fish-bearing streams and water bodies. A total of approximately four acres of Riparian Reserves located within units 9-1 and 10-2 would be treated by thinning; the Riparian Reserve thinning treatments would follow the same silvicultural prescriptions as the adjacent uplands. A 100-foot “no cut” buffer would be established along both sides of perennial streams and a 50-foot “no cut” buffer along both sides of intermittent streams. In treatment unit 9-1 yarding equipment would be allowed to use two old existing skid trails to yard trees from two acres. The location is 320-440 feet from the stream and an existing road is located between the skid trails and the stream. No widening of the existing trails would occur and no additional trees would be felled.

Yarding

Use existing skid roads to the extent possible. Confine ground-based activities to designated skid roads. Skid roads will generally be 12 feet in width and located 150 feet apart.

Skyline corridors will generally be 12 feet in width and located 150 feet apart at one end. In units 23-1 and 23-2, use existing skyline corridors to the greatest extent possible. To take advantage of the more open stand conditions created where cable yarding corridors converge near landings, the area within approximately a 100-foot radius downhill of the landings would be planted with shade-tolerant conifer seedlings.

Where tractor skid trails or skyline corridors are constructed, all reserved trees greater than 20 inches DBH that are cut for that construction would be left on-site to augment current CWD levels.

The number of landings and their size will be kept to a minimum required to reasonably harvest the units. Landings will be located by the purchaser and approved by the BLM. If the quantity of slash at the landings is sufficient, it would be made available for public firewood removal permits following completion of operation. Landing debris may be burned if it is determined by the BLM to be a fire hazard, however no other burning is planned.

Road and Landing Construction

Construction of 1,175 feet of new, natural surface, semi-permanent road would be required for yarding treatment unit 10-1. The road would be built on a stable bench near the ridge top and would not cross any streams. Following harvest, this road and all newly constructed landings would be decommissioned by decompacting (subsoiling) the surface. Decompacted surfaces would be planted or seeded with native plant material.

Hauling

Hauling of timber would be conducted during dry weather conditions when road related runoff is not present. Hauling from all units, except 31-1 and 31-2, will be further restricted with no hauling allowed until after August 5 each year. Additionally, hauling between August 6 and September 15 would be restricted to the daily time period between two hours after sunrise to two

hours before sunset.

2.2 Alternative 2 (No Action)

The BLM would not implement the density management thinning project at this time. The plant and animal communities would mostly be dependent on ecological processes that would continue to occur based on existing conditions.

CHAPTER 3.0 AFFECTED ENVIRONMENT and ENVIRONMENTAL EFFECTS

In accordance with law, regulation, executive order and policy, an interdisciplinary team reviewed the elements of the human environment to determine if they would be affected by the alternatives described in Chapter 2.0 (Appendix 2). Those elements of the human environment that were determined to be affected define the scope of environmental concern. This chapter describes the current condition and trend of those affected elements, and the environmental effects of the alternatives on those elements.

For a full discussion of the physical, biological and social resources of the Salem District, refer to the FEIS. The discussion in this environmental assessment is site-specific and supplements the discussion in the FEIS.

3.1 Invasive, Non-Native Species

3.1.1 Affected Environment

Past logging practices and associated road building has allowed an influx of invasive/non-native weed infestations into disturbed areas adjacent to the proposed density management thinning treatment units. All noxious weeds identified within the vicinity of the project area are designated Priority III (established infestations) on the Oregon Department of Agriculture (ODA) noxious weed list. These weed species are commonly found throughout Western Oregon tending to occupy areas of high light. Some degree of invasive/non-native weed species introduction or spread is probable as management activities occur in the project areas. Soil disturbing activities such as yarding corridors, landings, and road decommissioning would be the most likely places for weed establishment. Presently, there are no weeds within the forest interior of any of the treatment units (only along roadsides and within recent regeneration harvest units close by).

3.1.2 Environmental Effects

3.1.2.1 Alternative 1 (Proposed Action)

The proposed action is to commercially thin using ground based and cable yarding. This alternative would have a higher potential to increase the spread of invasive/non-native weeds within the forest interior primarily because of the ground disturbance associated with the action. Some degree of noxious weed introduction or spread is probable as management activities occur.

Skid trails, landings and roads would be the most likely places for weed establishment. Project design features such as washing equipment and re-seeding or planting disturbed areas with native plant species that allow natural plant succession to occur will mitigate the invasion of noxious weed species. With regular monitoring and control treatments, this alternative is not expected to adversely increase invasive/non-native weeds beyond controllable levels.

Cumulative Effects: The analysis area for cumulative affects to invasive/non-native plant species lies within the Willamina Creek and Deer Creek watersheds, both tributaries to the South Yamhill River. Land management activities vary based on ownership and management practices. Examples of forest management activities within the affected area are regeneration harvest, commercial and pre-commercial density management thinning, young stand maintenance, roadside noxious weed treatments, new road construction, road decommissioning, road maintenance, culvert replacements, and helicopter landing zones. Activities that don't necessarily create disturbance but influence the spread of weed seeds are recreational hiking, biking, fishing, and hunting. Other sources of seed disbursement are from wildlife that are either passing through or frequent the area, water movement, and wind. Many past and present management activities tend to open dense forest settings and disturb soils therefore provide opportunities for widespread weed infestations to occur. Many, if not all of the weed species identified on the Priority III (established infestations) on the Oregon Department of Agriculture's (ODA) noxious weed list are present throughout the area. Because of their presence throughout both of these watersheds seed dispersion is readily available. Most non-native weed species are not shade tolerant and will not persist in a forest setting as they compete for light when tree canopies close and light to the understory is reduced.

The effects of implementing Alternative 1 will have a limited influence on increasing weed populations in this area. The weed seed that could be disbursed is limited by design features that mitigate infestations by introducing competing native grass seed on disturbed sites (e.g. road and landings).

3.1.2.2 Alternative 2 (No Action)

This alternative would not increase the spread of invasive/non-native weeds within the forest interior because no action would occur (no disturbance). Although continued vehicle traffic associated with recreational use may continue to contribute to the spread of invasive/non-native weeds along roads, uncontrollable population levels is not predicted

3.2 Fish

3.2.1 Affected Environment

The Willamina Creek drainage is a 5th field watershed containing 296 miles of streams. Willamina Creek flows into the South Fork of the Yamhill River, which converges with the North Fork of the Yamhill at the town of McMinnville to form the mainstem Yamhill River, which flows into the Willamette River. The proposed treatment area is located within the Willamina Creek and Deer Creek watersheds, both tributaries to the South Yamhill River. The Upper Willamina 6th field watershed contains 25,031 acres, while the Upper Deer Creek 6th field contains 14,177 acres. There are approximately six acres of treatment area within the Upper Deer Creek watershed, all of which are on a ridgetop and are some distance from stream channels or Riparian Reserves (RR). For this reason, the analysis of effects will focus primarily

on the Willamina Creek watershed.

The fish species with status found within the Willamina Creek watershed are listed in Table 2. The proposed thinning units are located approximately 0.25 miles (unit 24-1) or more away from Willamina Creek, which is also the nearest steelhead habitat. Unit 24-1 is located on a flat ridgetop and has no Riparian Reserve entry. Units 23-1 and 23-2 are also relatively flat ridgetop units with no Riparian Reserve entry. The only streams located near the units are small tributaries of Willamina Creek that are not fish-bearing.

Table 2. Fish Species and Status. This table lists the fish species found within the Willamina Creek Watershed by their name and status.		
Common Name	Scientific Name	Status
coho salmon	<i>Oncorhynchus kisutch</i>	Magnuson-Stevens Fishery Conservation and Management Act, EFH (Essential Fish Habitat)
Upper Willamette steelhead trout	<i>Oncorhynchus mykiss</i>	Endangered Species Act, federally listed as threatened
Pacific lamprey	<i>Lampetra tridentatus</i>	Bureau assessment
river lamprey	<i>Lampetra ayresi</i>	Bureau tracking

3.2.2 Environmental Effects

3.2.2.1 Alternative 1 (Proposed Action)

Absence of fish-bearing streams within treatment units and design features such as no-cut buffers along streams and minimal thinning (4 acres or less) in Riparian Reserves should preclude adverse direct impacts to fish or fish habitat. Sediment delivery to streams is not likely to occur as a result of road building/decommissioning and yarding of logs. Potential impacts to aquatic habitat include turbidity and sediment from log transport. For the reasons stated below, the Proposed Action is not expected to have any adverse effects to fish or their habitat and would not adversely affect EFH for coho salmon.

Timber harvest is not expected to result in additional sediment or turbidity in streams adjacent to the units. The units are relatively flat, with average slopes ranging from 15% to 35%. Slopes less than 35% typically have little risk of landslides. The areas that are ground-based yarded would require designated skid roads and would use existing roads wherever practical. The areas expected to be ground-based yarded are on relatively flat terrain and outside of Riparian Reserves, which would ensure that there is no direct path for sediment movement from these areas to surface water. An estimated 1,175 feet of natural surfaced road would be constructed in unit 10-1. There are no new stream crossing structures planned. The road would be built in a stable location on relatively flat ground. The natural surfaced roads would be subsoiled, water barred and blocked upon completion of yarding. Any roads that are to remain open after yarding is completed would have been surfaced with durable rock, which would reduce any sediment movement off those roads. Ground disturbance occurring with harvest equipment will be located sufficient distances from stream channels to avoid introduction of fine sediments. With the

exception of four acres of thinning in Riparian Reserves, the units are located over 200 feet from streams. The area between the units and the streams is expected to filter any sediment from the units before it reaches the streams.

The haul roads have the potential to introduce sediment in small quantities to streams, but this increase is expected to be minimal as the roads to be used are surfaced with asphalt or durable crushed rock. Traffic breaks down surfacing material resulting in finer surface gradation and increased sediment transport from the road surface. Road use however will have seasonal restrictions (dry season only) and as such, no sediment is expected to leave the road bed while haul is occurring. Any fine sediment created by hauling traffic would most likely be washed from the road surface in the first few precipitation events in the fall that are sufficient to cause runoff from the road surface. Fine sediments may enter streams as either bedload or suspended sediment (turbidity), depending on the size of the sediment and the distance it must travel between the road and the stream. The further it must travel, the more likely that the heavier sediment particles will be stored in the tributary channels and the smaller particles will enter the fish bearing stream as suspended sediment. The amount of sediment produced from hauling was not quantified, but is expected to be negligible.

The only crossing of steelhead habitat is a bridge on Willamina Creek that has flat approaches, one of which is paved and the other is graveled. The most likely area for road sediment to enter streams is along the East Creek road in section 17 where the road crosses several small headwater streams of Willamina Creek. Most of these crossings are intermittent and they are located approximately one mile above steelhead habitat. It is likely that any sediment will be stored in the upper reaches of these streams and released over time during storm events as a negligible portion of the background sediment load. The 4-7-36 road is the main BLM access route in the Willamina Creek area. The haul route will parallel steelhead habitat for approximately 5 miles. The road varies from 100 feet to 500 feet away from the creek. This is an all-season road and has had extensive work (i.e. new durable rock, culvert and cross drains replaced, and ditches cleaned and reseeded to intercept road sediments) in recent years. The East Creek county road parallels steelhead habitat for about one mile. For most of this section riparian vegetation screens the creek from the road, though there is a short section where the road is very close to the stream. The road is flat and with the restriction of hauling to dry weather conditions there should be little sediment that would reach the stream.

Cumulative Effects: The BLM 1998 *Deer Creek, Panther Creek, Willamina Creek and South Yamhill Watershed Analysis* identified water temperature, landslides, streambank erosion, low flows, and stream channels containing little or no complexity as likely water quality problems within the Willamina Creek watershed. Past and present actions, primarily timber harvest, road construction, and residential development, have generally resulted in few legacies (i.e., larger green trees, snags, and CWD) being retained from the previous stands and degraded riparian habitat, and have influenced the hydrologic processes of the watershed to the point that portions of the stream channels are at risk or not functioning properly. Stream buffers on private lands are typically on third-order and larger streams, and are quite narrow (usually in width of one normal tree spacing). Many of the buffers on private lands have been windthrown. The trend on private land, 63% of the watershed, is to harvest stands while they are still well within the closed sapling stage, maintaining primarily Douglas-fir plantations. About 91% of the private lands are

in the closed sapling, open sapling, early grass-forb and non-forest condition. The amount of large woody debris of sufficient size and location that can enter streams is much less than necessary to sustain current conditions.

Future management actions on federal land would be in accordance with approved land management plans which contain management direction to maintain or restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Due to nearly 32% of the Willamina Creek watershed being owned by the BLM or FS, restoration activities implemented on federal land within portions of the watershed have the potential to beneficially impact ecosystem function throughout the watershed. In addition, the *Oregon Plan for Salmon and Watersheds* should lead to some improvement in aquatic habitat, though to what extent is unknown, as this is largely a volunteer effort.

3.2.2.2 Alternative 2 (No Action)

Under this alternative, there would be no timber hauling, road construction or harvesting activity at this time. Baseline stream habitat conditions would continue as described in the *Deer Creek, Panther Creek, Willamina Creek and South Yamhill Watershed Analysis*. No direct or indirect effects would occur to fish or fish habitat. Trees that would die from natural succession and competition would be of smaller average diameter, providing less effective and less durable wood for instream habitat for fish.

3.3 Wildlife

3.3.1 Affected Environment

A discussion of the affected environment as it relates to the four wildlife species of concern which are potentially impacted by the Stoned Gopher Project is contained below, with the potential impacts discussed in section 3.3.2.

Species listed or proposed under the Endangered Species Act:

Northern Spotted Owl – FT (Federally Threatened)

The proposed action would occur on lands considered to be spotted owl dispersal habitat. This is based on the relatively young stand age (47-83 years) and the resultant simple forest structure and high stand density. Additionally, all of the stands are very deficient in CWD, both snags and down logs.

Six of the treatment units (9-1, 10-1, 10-2, 23-1, 23-2 and 24-1) are located near and/or adjoining stands of suitable owl habitat. This suitable habitat has not been surveyed to fulfill current protocol standards; past spotted owl surveys conducted within some portions of the proposed project areas have expired and do not currently fulfill protocol requirements.

Marbled Murrelet - (FT)

Ranging from approximately 23 to 28 miles from the ocean, the proposed thinning units are located within Marbled Murrelet Zone 1 as identified within the NWFP (Northwest Forest Plan).

With the nearest known murrelet site being more than 8 miles to the northwest, there are no known occupied murrelet sites within the vicinity of the proposed project area. However,

murrelet presence has been detected approximately 5 miles to the north-northeast of the project area, and in 2003 the Confederated Tribes of the Grand Ronde detected what is believed to be murrelet activity (28 detections) while conducting murrelet radar surveys approximately 3 miles to the southwest of the project area. (Tillamook RA staff plan to follow-up these radar detections with murrelet surveys during the 2004 murrelet survey season.)

There are no trees with potential marbled murrelet nesting platforms located within any of the proposed treatment units, however there is suitable or potential murrelet habitat directly adjacent to and/or within 0.25 miles of units 10-2, 23-1 and 23-2, as well as along the haul routes associated with these units and with units 9-1, 10-1 and 24-1. This habitat is generally marginal in quality. The habitat within 0.25 miles of the treatment units was surveyed to protocol in 2000 and 2001 although the habitat along the haul routes was not; there were no murrelet detections.

Bald Eagle - (FT)

The nearest known bald eagle nest is approximately 8 miles northwest of the proposed action.

Suitable habitat for bald eagles is defined as conifer-dominated habitats that are 80-years-old or older and located within 1.0 mile of a major river or 0.5 mile of a major tributary. Although no recent known eagle sightings have been recorded within or near the proposed treatment areas, suitable roosting, foraging and/or nesting eagle habitat is present along Willamina Creek, which could be considered a major tributary. This is based upon the presence of scattered individual or clumps, of large second-growth and/or old-growth trees, or patches of 80+ year-old conifers in proximity to portions of Willamina Creek. Willamina Creek is within 0.5 miles of unit 24-1 and portions of unit 23-1. Eagles are rarely seen along Willamina Creek. The highest probability of eagles using the project area would most likely occur during the winter season when dispersed eagle use (foraging or roosting) could be expected where ever suitable habitat is present.

Other Special Status Species or Species of Concern:

Northern Red-Legged Frog – BA (Bureau Assessment)

Red-legged frogs require standing water to breed, however they are considered to be less aquatic than many other frog species and are regularly found far from water in the terrestrial uplands. An abundance of large CWD in the upland forest habitats may increase the quality of the habitat by offering both cover and a source of moisture that fosters a more humid microclimate during dryer periods.

Although red-legged frogs have not been observed in the immediate project area, they are likely present. There are some riparian areas adjacent to the proposed project area that contain permanent water and could function as red-legged frog breeding areas. The well shaded uplands currently provide habitat for non-breeding and dispersing frogs although the general lack of CWD may limit the areas habitat quality.

3.3.2 Environmental Effects

3.3.2.1 Alternative 1 (Proposed Action)

A discussion of the environmental effects (disturbance and/or habitat modification) as it relates to the four wildlife species of concern which are potentially impacted by the Stoned Gopher Project is contained below.

Northern Spotted Owl (Disturbance and Habitat Modification)

Disturbance - There is no suitable spotted owl habitat within the proposed treatment units nor are there any known spotted owl sites within the vicinity of the Stoned Gopher project. However, unsurveyed suitable habitat is directly adjacent and/or within 0.25 miles of 6 of the 8 proposed density management units (9-1, 10-1, 10-2, 23-1, 23-2, and 24-1) and associated haul routes. Activities which generate noise above the ambient noise level within these 6 units (felling, yarding) may occur during the critical and non-critical spotted owl nesting periods however hauling from these units would be restricted until after August 5th each year.

Based upon the potential for the generation of noise above the ambient level within 0.25 miles of unsurveyed suitable spotted owl habitat during the critical and non-critical breeding season the proposed project *MAY AFFECT and is LIKELY TO ADVERSELY AFFECT* the spotted owl based upon the potential for disturbance.

Habitat Modification - The proposed action would thin approximately 160 acres of spotted owl dispersal habitat which is dispersed across 8 treatment units to approximately 74 to 105 trees per acre; this is expected to result in a post-harvest, average canopy closure of the treated stands of approximately 60%. Post-treatment, these acres are expected to remain in a condition as to continue to function as spotted owl dispersal habitat. There are some expected beneficial impacts to the development of spotted owl suitable habitat expected to result from implementation of the proposed action. Treated stands are expected to develop some late seral habitat features sooner than without treatment. These features include a stand dominated by large green trees, potential sources large CWD including both snags and logs, and a more diverse and/or complex vertical and horizontal stand structure. These conditions could be expected to provide for better spotted owl foraging and nesting opportunities.

As stated within the affected environment section, all of the proposed treatment units are very deficient in CWD – both snags and down logs; stand exam data from two of the proposed stands resulted in no CWD being recorded, and four of the stands showed less than 100 cubic feet of CWD per acre. Where tractor skid trails or skyline corridors are constructed, all reserved trees greater than 20 inches DBH that are cut for that construction would be left on-site to augment current CWD levels. However, one expected adverse impact of the proposed project is that the natural development of snags is expected to be greatly reduced or halted for the next 20-30 years as a result of the thinning. This loss of the future snag potential coupled with the direct loss of some of the few snags that currently occur in the project area through logging operations could have a slight adverse impact on woodpecker populations and potentially the secondary cavity users that depend on woodpeckers to provide shelter. A secondary cavity user that is of particular importance to the spotted owl is the northern flying squirrel. These adverse impacts are expected to be minor however based upon the relatively small size and dispersed nature of

the thinning units and the fact that the majority of the proposed treatment units are interspersed with stands of mature forest which are not scheduled for density management treatments.

Based upon the beneficial and adverse impacts to spotted owl dispersal habitat discussed above and the potential impacts to the development of suitable habitat associated with the implementation of proposed project, the Stoned Gopher project *MAY AFFECT and is NOT LIKELY TO ADVERSELY AFFECT* the spotted owl based upon the potential for habitat modification.

Marbled Murrelet (Disturbance and Habitat Modification)

Disturbance – There is suitable or potential murrelet habitat directly adjacent to and/or within 0.25 miles of units 10-2, 23-1, and 23-2 as well as along the associated haul routes for these units and three additional units 9-1, 10-1, 24-1. The habitat within 0.25 miles of the treatment units was surveyed to protocol in 2000 and 2001 although the habitat along the haul routes was not; there were no murrelet detections. There is no suitable murrelet habitat within 0.25 miles of the proposed units 31-1 or 31-2 or along the haul routes associated with these two units.

Hauling from all units, except 31-1 and 31-2, would be restricted until after August 5 each year. Additionally, hauling between August 6 and September 15 would be restricted to the daily time period between two hours after sunrise to two hours before sunset.

Based upon the potential for the generation of noise above the ambient level within 0.25 miles of unsurveyed suitable murrelet habitat along portions of the haul route during the non-critical portions of the breeding season and the fact that daily time restrictions would be utilized to minimize the potential impact, the proposed project *MAY AFFECT but is NOT LIKELY TO ADVERSELY AFFECT* the marbled murrelet as a result of the potential for disturbance.

Habitat Modification - Even though Stoned Gopher project would occur in stands that are not yet suitable for murrelet nesting in that the units contain no potential nesting structures and therefore are not used by murrelets, three of the proposed units are located directly adjacent to suitable or potential murrelet habitat that has been surveyed to protocol and found to be unoccupied. Most of this habitat is marginal in quality. While the proposed project would not be expected to directly impact any of the potentially suitable murrelet nest trees, it is possible that treatments within the thinning units could indirectly alter the current or future stand characteristics of the suitable murrelet stands – beneficially and/or adversely. Based upon the fact that the treatments are expected to maintain an average canopy closure of approximately 60% this potential for impact is believed to be minor, but at a minimum, the treated stands would be placed on a trajectory that would help attain late-successional forest conditions sooner than if the stands were left unthinned – a beneficial impact relative to the development of larger blocks of suitable murrelet habitat.

Based upon these facts, the proposed project *MAY AFFECT but is NOT LIKELY TO ADVERSELY AFFECT* the marbled murrelet as a result of the potential for habitat modification.

Bald Eagle (Disturbance)

Based upon the facts that suitable eagle habitat exists within the vicinity of two of the proposed treatment units and along the haul routes, and based upon the seasonal timing of the potential hauling and lack of seasonal restrictions for harvesting activities potentially occurring within the proposed units, and well as the fact that it is very unlikely that there is an unidentified eagle nest within vicinity of any of the proposed treatment units or haul routes, it has been determined that the Stoned Gopher project *MAY EFFECT* although it is *NOT LIKELY TO ADVERSELY EFFECT* the bald eagle.

Red-Legged Frog (Habitat Modification)

There are riparian areas adjacent to the proposed project area that contain permanent water and could function as red-legged frog breeding areas. The well shaded uplands within and near the project areas provide habitat for non-breeding and dispersing red-legged frogs especially during periods of high humidity. The riparian buffers provide adequate protection to all potential breeding habitat within the vicinity of the proposed action. Additional protection of this potential breeding habitat would be obtained from the prohibitions of falling trees into the reserves and entering the reserve with ground-based equipment.

There may be a small effect associated with direct impacts to individual frogs that happen to be in the upland areas while harvest operations are on-going; this effect is considered to be negligible. The thinning of the project area would reduce the canopy cover on approximately 160 acres and may negatively impact the cool, moist micro habitats found on the forest floor within portions of the units causing greater warming and drying than may be desirable for red-legged frogs. This could have an adverse impact upon these uplands to function as red-legged frog habitat especially given the situation that all of the stands proposed for thinning are generally deficient in CWD, both snags and down logs. These effects would be expected to be most notable during the summer months in those portions of the treatment areas within gaps, small openings or lower retention levels and/or on those slopes with a southern exposure. The adverse effects are expected to be temporary. Within the first 5 years, the crowns of the retained overstory trees would begin to expand and/or the understory species would start to respond to the effects of the thinning. This would increase the shade level on the forest floor resulting in a cooler, moister microclimate.

Due to the light nature of the proposed thinning, scattered distribution of the treatment units and the fact that the identified adverse impacts are considered to be temporary, the Stoned Gopher Project would not be expected to influence the viability of the local red-legged frog population or result in the elevation of their status to any higher level of concern including the need to list under the ESA.

Cumulative Effects: Based upon the nature of the proposed action, the identified impacts relative to wildlife resources are generally associated with the potential for disturbance. There is little adverse impact associated with the habitat modification based on the fact that the projects' design features have minimized the short-term negative impacts. The majority of the federal

lands within the Willamina Creek watershed are being managed for the development and maintenance of habitat for late-seral stage species such as the spotted owl and marbled murrelet. The long-term impacts associated with the Stoned Gopher Project, as a thinning designed to promote the development of late seral stage habitat, are thought to be beneficial to proper ecosystem functioning. There have been a number of similar projects, designed with similar objectives that have been implemented within the Willamina Creek watershed under the NWFP; these include the Coast Creek and Willy's Elk Density Management projects. Similarly there are a few projects currently in the planning process which are located within the watershed; they involve operating in younger stands which may be in such a condition to function as spotted owl dispersal habitat and include thinning of the Indian Creek and Bald Mountain Progeny Test Sites.

Specific information on projects which have potential to disturb wildlife within the watershed is most available for federally funded, planned or implemented projects. They include but are not limited to the following: aerial law enforcement activities; routine aerial operations; rock quarry operations; firewood sales; young plantation maintenance including roadside pruning for fuel reduction; roadside brushing; road decommissioning, repair and maintenance; hazard tree removal; forest special use permits; powerline maintenance; cone gathering; special event permits; wildlife tree and down woody debris creation projects; fish habitat and riparian enhancement projects; and granting O&C road use permits. Two specific projects currently being planned to take place in the watershed include the Willamina Creek and Coast Creek fish habitat enhancement projects.

Less information is available on potentially disturbing management activities to occur on State, tribal or private lands. The BLM has recently received a request from the Boise Cascade Corporation for an O&C Road Use Permit to construct approximately 50 feet of permanent road, reconstruct approximately 1,100 feet of road and use another 2,500 feet of existing rock road (4-6-31.2 and 4-6-31.1) on BLM (Bureau of Land Management) land in T4S, R7W, Sec. 36 and T4S, R6W, Sec. 31, W.M.. This is within the vicinity of the Stoned Gopher units 31-1 and 31-2, in that portion of the general project area which is strongly dominated by early seral stage habitats. The duration of the permit would be from July 1 to November 30, 2004. New road construction would entail the removal of only 4-6 merchantable (<14 inches DBH) Douglas-fir trees from BLM land and would remove 0.02 acres of land from timber production. This permit would provide access to Boise Cascade to remove approximately 1 million board feet of timber from private land.

While State, tribal and private lands within the northern portion of the Oregon Coast Province, including the Willamina Creek Watershed, support some dispersal habitat for the northern spotted owl, the suitable owl habitat on these lands is generally marginal in quality and do not notably contribute to the viability of the species. In addition, State and private lands within the area do not provide significant amounts of suitable habitat for the marbled murrelet or bald eagle. Habitat conditions on these lands are not expected to notably improve within the foreseeable future.

Before the spotted owl was listed as a threatened species under the Act, Thomas et al. estimated in *A Conservation Strategy for the Northern Spotted Owl* (1990) that most privately-owned spotted owl habitat in Oregon (mature timber which would include murrelet habitat) would be eliminated within 10 years. Because the majority of private forest land in the action is used for timber production, little spotted owl or murrelet habitat remains on these lands other than small isolated patches. The habitat that does remain is expected to be greatly reduced over time.

The cumulative impacts resulting from the proposed action and the additional known projects would not be of a magnitude as to negatively impact species of concern. This is based on the following reasons:

1. Based upon the distribution of habitat, much of the potential for cumulative impacts to wildlife species of concern result from federal actions which generally incorporate seasonal and daily time restrictions to reduce the potential of disturbance to murrelet breed activities. The bulk of the mid- to late-seral stage habitat within the watershed is believed to be located on federal land. (Currently approximately 69% of the federal land within the watershed is in a condition to function as dispersal or suitable owl habitat.)
2. The majority of the late-seral stage habitat within the vicinity of the identified actions is of marginal quality.
3. The identified projects are generally separated by space and time sufficiently as to not repeatedly or continually disturb the same large blocks of late-seral stage habitat.

3.3.2.2 Alternative 2 (No Action)

Under this alternative no density management would occur within the proposed project area at this time and the forest stands would continue to grow and develop without management intervention. Douglas-fir growth and vigor would begin or continue to decline as tree-to-tree competition intensifies. Development toward late-successional habitat conditions in these stand types would be expected to continue to slow unless some form of disturbance occurs that would create openings in the stand to permit accelerated growth of some overstory trees and provides an opportunity for understory trees, shrubs, and herbs to develop. As the level of competition among the trees remains high, live crown ratios would decrease and diameter growth could be expected to decline. Competition-related mortality would increase, resulting in an appreciable pulse of snags and logs being added to the stands which would likely last for a couple of decades. These coarse woody debris additions would be from the smaller trees that slowly die from suppression (except in a few small areas where *P. weirii* infection has resulted in windthrow of some larger-sized Douglas-fir trees), and understory development would be limited.

Under the No Action Alternative, identified beneficial or adverse impacts of the proposed action would not occur at this site; this would include impacts related to habitat modification as well as the associated disturbance. However, another project area would be selected to replace the proposed project and PSQ timber volume, potentially resulting in impacts of a similar nature at a different location. Selection of the “No Action” Alternative would be of *NO EFFECT* upon the marbled murrelet, spotted owl, and bald eagle. In addition, selection of the “No Action” would

not adversely impact (result in the elevation of their status to any higher level of concern including the need to list under the ESA) any of the Special Status Species.

There are no identified cumulative impacts associated with the No Action Alternative.

3.4 Forest Productivity

3.4.1 Affected Environment

There are few current threats to forest health in the proposed units for density management treatment. Laminated root rot, caused by the fungus *P. weirii*, is a native root pathogen that is a natural part of many forest ecosystems. In most units, *P. weirii* probably affects less than 5 percent of the area. Treatment units 31-1 and 31-2 contain the highest levels of *P. weirii* infection, and it is estimated that the percentage of the area in disease centers in these units is ten percent or less.

Dense to overly dense 47- to 53-year-old Douglas-fir stands proposed for density management:

For the most part, the stands are quite dense, the trees are fairly uniform in size and spacing, and the overstory consists of a single canopy layer of Douglas-fir. Because of the very high levels of tree-to-tree competition in treatment units 10-1 and portions of 23-2 and 24-1, the smaller trees are dying from suppression and falling out of the overstories as the stands “self-thin.” Treatment units 31-1 and 31-2 were pre-commercially thinned, probably in the late 1960's.

Occasional larger-sized (>36 inch DBH) Douglas-fir trees occur in treatment units 10-1 and 24-1. In addition, there is a small component of grand fir, bigleaf maple and red alder in treatment units 31-1 and 31-2.

The diameter growth trend of the dominant trees generally ranges from steady to slowing down.

Because of the very high overstory tree densities, there is little understory vegetation in most places within these units, except where *Phellinus weirii* root rot or other factors has created a few small openings in the forest canopy. The understory canopy cover averages 10 percent or less. The most abundant understory species include vine maple, swordfern, salal, dwarf Oregon grape, and red huckleberry.

CWD levels are generally low in these stands. Most of the wood currently being contributed is from the smaller trees that have died from suppression (generally 8 inches DBH or less), and limbs. No snags occurred on the forest survey plots for any of the units.

Dense 72- to 83-year-old Douglas-fir stands proposed for density management:

For the most part, the stands are dense, the trees are quite uniform in size and spacing as the result of the previous commercial thinning some 15 to 20 years ago, and the overstory consists of a single canopy layer of Douglas-fir. Occasional larger-sized (>33 inch DBH) Douglas-fir trees occur in units 10-2, 23-1, and 23-2.

The diameter growth trend of the dominant trees is generally slowing down as tree-to-tree

competition intensifies.

Because the commercial thinning which occurred some 15 to 20 years ago allowed increased light to reach the forest floor, the understory vegetation became well developed in most places. The most abundant understory species are vine maple and salal. The combined canopy cover for these two species is generally 70 percent or higher. The vine maple canopy height averages between about 9 and 11 feet. Swordfern, dwarf Oregon grape, bracken fern, and red huckleberry are also fairly common. Advance western hemlock reproduction occurs occasionally.

CWD levels are generally low in these stands. Most of the wood currently being contributed is from the smaller trees that have died from suppression (generally 10 inches DBH or less), and limbs. Occasionally, larger-sized windthrown Douglas-fir trees have been added to the site as a result of *P. weirii* infection. The number of snags in these units are also low.

3.4.2 Environmental Effects

3.4.2.1 Alternative 1 (Proposed Action)

Thinning of the proposed treatment units is predicted to result in an increase in the average stand diameter, an increase in the crown ratios and limb development of the residual trees, stimulation of growth of understory shrubs and herbs, an increase in the windfirmness of the residual trees, and a decrease in the mortality of the smaller-sized trees. By thinning in a variable-spaced manner, some trees would be given more room to grow and others would be given less. This would increase overstory canopy heterogeneity and result in a more uneven pattern of understory development. The larger-sized trees would result in higher quality down logs and snags as the trees eventually die or are converted to snags or down logs through planned management actions.

Additionally, the patch cut areas associated with unit 10-1, is predicted to add to the overall diversity of the area by the development of pockets of multi-storied, conifer-dominated stand types within the variable-spaced thinning.

In consideration of past, present, and reasonably foreseeable actions, it is predicted that the proposed treatment would enhance the overall level of diversity in the area.

3.4.2.2 Alternative 2 (No Action)

The 47- to 53-year-old units proposed for density management are very overstocked, as indicated by Relative Density levels 60 or above. According to stand growth projections, the Relative Density of these units would reach 70 or above within the next 10 years and remain at those levels for at least the next 50 years. Above Relative Density 55, Douglas-fir growth and vigor begin to decline as tree-to-tree competition intensifies. Development toward late-successional forest conditions in these stand types is expected to continue to slow unless some form of disturbance occurs that creates openings in the stand to permit accelerated growth of some overstory trees and provides an opportunity for understory trees, shrubs, and herbs to develop. As the level of competition among the trees remains high, live crown ratios would decrease, diameter growth can be expected to decline, competition-related mortality would increase, CWD additions would be from the small trees that slowly die from suppression (except in a few small

areas where *P. weirii* infection has resulted in windthrow of some larger-sized Douglas-fir trees), and understory development would be limited.

The 72- to 83-year-old units proposed for density management are also overstocked, as indicated by Relative Density levels above 55. According to stand growth projections, the Relative Density of these units would reach 60 or above within the next 10 years and remain at those levels for at least the next 50 years. Development toward late-successional forest conditions in these stand types is also expected to continue to slow unless some form of disturbance occurs that creates openings in the stand to permit accelerated growth of some overstory trees and stimulates growth of understory trees, shrubs, and herbs. Under these relatively high levels of competition among the trees, live crown ratios would decrease, diameter growth can be expected to decline, competition-related mortality would increase, and CWD additions would be primarily from the small trees that slowly die from suppression (except in a few small areas where *P. weirii* infection has caused windthrow of some larger-sized Douglas-fir trees). The previous commercial thinning resulted in the development of relatively dense shrub-dominated understory, but as the overstory tree density continues to increase, further development of the understory would be limited.

3.5 Soils

3.5.1 Affected Environment

Soils within the project area are predominantly Hembre silt loam (T.4S., R.6W., sections 9 and 10; T.4S., R.7W., sections 23 and 24) and Ead and Peavine silty clay loams (T. 4S., R.6W., section 31; T.4S., R.7W., section 36). These are moderately deep, well drained soils with moderate permeability and moderately low to moderate productivity for timber. The main limitations for the management of timber on these soils are susceptibility of the soil to compaction, the hazard of erosion, and plant competition. Using standard wheeled and tracked equipment when the soil is moist causes rutting and compaction, especially on Peavine and Ead soils. Displacement of the surface layer occurs most readily when the soil is dry. Puddling can occur when the soil is wet. Cable yarding systems impact the soil less and help to maintain soil productivity better than ground-based yarding. When wet or moist, unsurfaced roads and skid trails are soft, and may be impassable during rainy periods. Logging roads require suitable surfacing for year-round use.

Soil productivity has been reduced on portions of the project area through past ground-based yarding activities. It is estimated that 25% (29 acres) of the 116 acres which are suitable for ground-based yarding have been impacted through soil compaction or displacement. Of this, the areas that are compacted but had no displacement of the surface soil layers have likely had some recovery from those impacts, but the extent of recovery is unknown. Overall, it is estimated that timber productivity has been reduced by 50% on those 29 acres of land.

3.5.2 Environmental Effects

Long-term soil productivity is very complex and is likely affected by a large number of factors, including soil physical, chemical and biological properties, nutrient inputs and climate. Logging and road construction have impacts on soil productivity primarily through removal of the vegetation and its nutrients, compaction of the soil with an associated decrease in soil permeability to water and air, displacement of the soil surface horizons which removes most of

the soil nutrient store, and changes in soil temperature and associated levels of biological activity through removal of shade and exposure to sunlight.

3.5.2.1 Alternative 1 (Proposed Action)

Ground-based yarding on 116 acres and construction of 1,175 feet of new natural-surfaced road would reduce long-term soil productivity for timber by 50% on approximately 18 acres of ground. The 18 acres of disturbance breaks down to 0.3 acres associated with the road construction and the remainder from skid trails from the ground-based logging, and assumes that 15% of the area harvested would have soil compaction or displacement occur. The skid trails are usually about 12 feet wide and wind around reserved trees, stumps, and other obstacles. Soil compaction and displacement on the skid roads and haul roads would reduce soil nutrient levels, reduce infiltration and permeability, and increase surface runoff and erosion. The 1,175 feet of natural surfaced roads would be subsoiled, waterbarred and blocked upon completion of yarding. It is estimated that timber productivity would be reduced by 50% on the 18 acres which are affected by soil compaction and displacement in this alternative.

Cumulative Effects: An analysis of cumulative effects on soil resources addresses the effects of the proposed action along with past, present and reasonably foreseeable future actions on soil productivity within the Willamina Creek watershed. Soil productivity is affected by activities, such as timber harvest or road construction, which impact specific locations on the ground, however looking at the existing and anticipated road construction and ground-based timber harvest gives a reasonable picture of the amount of soil disturbance in the watershed, which can then be related to the historic, undisturbed condition to give an overall view of soil productivity impacts in the watershed.

Disturbed soil areas were analyzed by identifying areas with Forestry zoning and with slope gradients less than 40% in the GIS (Geographic Information System). It was assumed that all of these are capable of being ground-based yarded, and that 25% of this area has been or would be disturbed by ground-based equipment. Using these assumptions, there are 9,800 acres of soil disturbed by roads or timber harvest, which is 19% of the watershed. This is considered to be a conservative estimate, as the area disturbed by tractor logging could be much higher than the 25% assumption and the quantity of roads in the GIS database may be low as well.

The 19% soil disturbance level indicates that soil productivity has been or would be impacted on a large portion of the watershed, and that the overall productivity of soils in the watershed has been reduced by that amount. The 18 acres of potential soil disturbance from this project would have a minimal effect on overall soil productivity in the watershed.

3.5.2.2 Alternative 2 (No Action)

Under this alternative, there would be no timber hauling, road construction or harvesting activity that could increase ground disturbance, erosion or sedimentation. Current trends of change in soil productivity would continue.

Cumulative Effects: As no management activities will be implemented under this alternative, no cumulative effects to soils due to management treatments would occur.

CHAPTER 4.0 LIST OF PREPARERS

The following individuals participated on the interdisciplinary team or were consulted in the preparation of this EA:

Katrina Symons	Interdisciplinary Team Lead, NEPA, Cultural Resources
Matt Walker	Fisheries Biologist
Bob Ruediger	District Fisheries Biologist
Kurt Heckerth	Botanist
Steve Bahe	Wildlife Biologist
Bob McDonald	Soils and Hydrology
Debra Drake	Outdoor Recreation Planner
Kent Mortensen	Fuels

CHAPTER 5.0 PUBLIC INVOLVEMENT and CONSULTATION

5.1 Public Scoping and Notification

5.1.1 30-day Public Comment Period

The Environmental Assessment and Finding of No Significant Impact will be made available for a 30-day public review period. Notification of the comment period will include: the publication of a legal notice in the *Headlight Herald* and *News-Register*, newspapers of Tillamook and McMinnville, Oregon, respectively; a letter to be mailed to those individuals, organizations, and agencies that have requested to be involved in the environmental planning and decision making processes for proposed timber sales; and posting on the Internet at <http://www.or.blm.gov/salem/html/planning/index.htm> under Environmental Assessments. Comments received in the Tillamook Resource Area Office, 4610 Third Street, Tillamook, Oregon 97141, on or before the end of the 30-day comment period will be considered in making the final decision for this project.

5.2 Consultation

5.2.1 United States Fish and Wildlife Service

In accordance with regulations pursuant to Section 7 of the Endangered Species Act of 1973, as amended, formal consultation with the USFWS concerning the potential impacts of implementing the Stoned Gopher Density Management Project upon the spotted owl, marbled murrelet and bald eagle has been completed. The Stoned Gopher project was included within the programmatic habitat modification biological assessment prepared by the interagency Level 1 Team (terrestrial subgroup) for FY 2003-2004 projects within the North Coast Province which may modify the habitat of bald eagles, northern spotted owls and marbled murrelets (Biological Opinion *USFWS reference 1-7-02-F-958*) under the categories of "light to moderate thinning". On June 10, 2004, the Stoned Gopher project will be discussed at the interagency Level 1 Team meeting in order to assure compliance with Standards of the programmatic consultation. If the

project is determined to be not in compliance with the standards of the programmatic consultation, the project would be changed to be in compliance with the programmatic consultation or a project-specific consultation would be conducted. In either case, all of the appropriated Terms and Conditions of the appropriate Biological Opinion would be incorporated. Should the project not be implemented within FY 2004 as currently planned but rather in a subsequent year, the project would likely be resubmitted for inclusion in the next appropriate programmatic consultation.

Any ESA consultation with USFWS required on the subsequent maintenance of trees planted as a part of this project, (such as in root disease centers or on landings) would likely be accomplished by inclusion of the maintenance work within the appropriate Programmatic Biological Assessment for Activities in the North Coast Province which might disturb bald eagles, northern spotted owls or marbled murrelets which is prepared by the North Coast Province Interagency Level 1 Team.

5.2.2 NOAA Fisheries (National Marine Fisheries Service)

In accordance with regulations pursuant to Section 7 of the Endangered Species Act of 1973, as amended, informal consultation concerning the potential impacts of the proposed action on Upper Willamette steelhead is anticipated to be initiated in June 2004.

Consultation under the Magnuson-Stevens Fishery Conservation and Management Act is not required as the proposed action would have no adverse impact to Essential Fish Habitat for any population of Chinook or coho salmon.

APPENDIX 1

ALTERNATIVE DEVELOPMENT SUMMARY

Environmental Assessment Number OR-086-04-02

Pursuant to Section 102 (2) (E) of NEPA (National Environmental Policy Act of 1969, as amended), Federal agencies shall “Study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources.” The CEQ (Council on Environmental Quality) regulations for implementing the procedural provisions of NEPA states, alternatives should be “reasonable” and “provide a clear basis for choice” (40 CFR 1502.14).

In light of the direction contained in both NEPA and the CEQ Regulations, the following questions were used to 1/ identify the alternatives to be analyzed in detail in this environmental assessment that are in addition to the “proposed action” and “no action” alternatives, and 2/ document the rationale for eliminating alternatives from detailed study.

- 1. Are there any unresolved conflicts concerning alternative uses of available resources?** *If yes, document and go to Question #2. If no, document rationale and stop evaluation.*

No, there are no unresolved conflicts concerning alternative uses of available resources.

- 2. What alternatives should be considered that would lessen or eliminate the “unresolved conflicts concerning alternative uses of available resources”?** *List alternatives and go to Question #3. If no alternative is identified other than the “no action” alternative, document and stop evaluation.*
- 3. Of those alternatives identified in Question #2, are there reasonable alternatives for wholly or partially satisfying the need for the proposed action?** *If so, briefly describe alternatives and go to question #4. If no, document rationale and stop evaluation.*
- 4. Of those alternatives identified in Question #3, will such alternatives have meaningful differences in environmental effects?** *If so, seek line officer approval to carry alternatives forward for detailed analysis in the environmental assessment. If no, document rationale and stop evaluation.*

APPENDIX 2

ENVIRONMENTAL ELEMENTS

Environmental Assessment Number OR-086-04-02

In accordance with law, regulation, executive order and policy, the interdisciplinary team reviewed the elements of the human environment to determine if they would be affected by the alternatives described in Chapter 2 of the EA (environmental assessment). The following three tables summarize the results of that review. Those elements that are determined to be “affected” will define the scope of environmental concern, Chapter 3 of the EA.

Table 1. Critical Elements of the Environment. This table lists the critical elements of the human environment (BLM Handbook 1790-1) which are subject to requirements specified in statute, regulation, or executive order and the interdisciplinary teams predicted environmental impact per element if the alternatives described in Chapter 2 of the Environmental Assessment were implemented.		
Critical Element of the Human Environment	Status 1/ Not Present 2/ Not Affected 3/ Affected	Interdisciplinary Team Remarks 1/ If not affected, why? 2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in Appendix C of the RMP to reduce or avoid environmental harm
Air Quality (Clean Air Act)	Not Affected	Dust created from vehicle traffic on gravel or natural-surfaced roads, road construction and logging operations would be localized and of short duration. If the landing debris is determined by the BLM to be a fire hazard, then it would be burned in accordance with the <i>Oregon State Implementation Plan and Oregon Smoke Management Plan</i> . The impact of smoke on air quality is expected to be localized and of short duration. Particulate matter would not be of a magnitude to harm human health, affect the environment, or result in property damage. As such, the proposed action is consistent with the provisions of the Federal Clean Air Act.
Areas of Critical Environmental Concern	Not Present	There are no Areas of Critical Environmental Concern located within the project area.
Cultural, Historic, Paleontological	Not Present	Cultural resource surveys were conducted and no cultural resources were identified. If cultural resources are found during the implementation of the proposed action, the project may be redesigned to protect the cultural resource values present, or evaluation and mitigation procedures would be implemented based on recommendations from the District Archaeologist.
Energy (Executive Order 13212)	Not Present	There are no known energy resources located in the project area. The proposed action will have no effect on energy development, production, supply and/or distribution.
Environmental Justice (Executive Order 12898)	Not Affected	The proposed action is not anticipated to have disproportionately high and adverse human health or environmental effects on minority populations and low-income populations.
Prime or Unique Farm Lands	Not Present	

Table 1. Critical Elements of the Environment. This table lists the critical elements of the human environment (BLM Handbook 1790-1) which are subject to requirements specified in statute, regulation, or executive order and the interdisciplinary teams predicted environmental impact per element if the alternatives described in Chapter 2 of the Environmental Assessment were implemented.

Critical Element of the Human Environment	Status 1/ Not Present 2/ Not Affected 3/ Affected	Interdisciplinary Team Remarks 1/ If not affected, why? 2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in Appendix C of the RMP to reduce or avoid environmental harm
Flood Plains (Executive Order 11988)	Not Affected	The proposed action does not involve occupancy and modification of floodplains, and will not increase the risk of flood loss. As such, the proposed action is consistent with Executive Order 11988.
Hazardous or Solid Wastes	Not Affected	There would be no environmental effects associated with this element due to the implementation of the Best Management Practices contained in the Salem RMP and the terms/conditions of the timber sale contract. Failure to comply with the terms and conditions of the timber sale contract can result in violations, suspension or cancellation of the contract per section 10.
Invasive, Nonnative Species (Executive Order 13112)	Affected	The proposed action will result in soil disturbance which provides an opportunity for the introduction of noxious weeds and/or invasive non-native plant species. The unit of measure is a narrative. <i>Refer to Section 3.1 of the EA for a discussion of the affected environment and environmental effects of the alternatives related to this element of the environment.</i>
Native American Religious Concerns	Not Present	
T/E (Threatened or Endangered) Fish Species or Habitat	Affected (steelhead) Not Present (Chinook salmon and Oregon chub)	<u>Affected:</u> There may be sediment input into streams along proposed haul routes that may have an affect on Upper Willamette steelhead or its habitat. The unit of measure is a narrative description of the potential for impacts. <i>Refer to Section 3.2 of the EA for a discussion of the affected environment and environmental effects of the alternatives related to this element of the environment.</i> <u>Not Present:</u> Upper Willamette Chinook salmon and Oregon chub are not known to have ever utilized the streams in or adjacent to the project area (e.g., Willamina Creek) as habitat. The lower portions of the South Yamhill River may be used by spring chinook juveniles as rearing/migratory habitat, but this would occur over 20 miles downstream from the proposed action. The Oregon chub is present in the Willamette River Basin but its only known population at this time is inside the Finley Wildlife Refuge.
T/E (Threatened or Endangered) Plant Species or Habitat	Not Present/ Not Affected	Surveys were conducted throughout the proposed project area and no T/E species were found.

Table 1. Critical Elements of the Environment. This table lists the critical elements of the human environment (BLM Handbook 1790-1) which are subject to requirements specified in statute, regulation, or executive order and the interdisciplinary teams predicted environmental impact per element if the alternatives described in Chapter 2 of the Environmental Assessment were implemented.

Critical Element of the Human Environment	Status 1/ Not Present 2/ Not Affected 3/ Affected	Interdisciplinary Team Remarks 1/ If not affected, why? 2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in Appendix C of the RMP to reduce or avoid environmental harm
T/E (Threatened or Endangered) Wildlife Species, Habitat and/or Designated Critical Habitat	<p>Affected (Potential for disturbance to BE, NSO and MAMU; modification to NSO dispersal habitat, slight potential to impact surveyed MAMU habitat)</p> <p>Not Affected (BE habitat and NSO/MAMU Designated Critical Habitat)</p>	<p><u>Affected:</u> The proposed action would result in the potential for disturbance to NSO (northern spotted owls), MAMU (marbled murrelets) and BE (Bald Eagles). Additionally, the proposed action would modify NSO dispersal habitat and would have a slight potential to impact surveyed suitable MAMU habitat. The unit of measure is a narrative description of the potential for impacts and acres of NSO dispersal habitat affected. Design features are those contained within the Terms and Conditions of the Biological Opinion (1-7-02-F-958) such as seasonal and daily time restrictions. <i>Refer to Section 3.3 of the EA for a discussion of the affected environment and environmental effects of the alternatives related to this element of the environment.</i></p> <p><u>Not Affected:</u> The proposed action would not occur within designated critical habitat for the NSO or MAMU. Additionally, the proposed action would not affect BE habitat.</p> <p>Specialist Report: Biological Evaluation of Wildlife Resources prepared May 26, 2004.</p>
Water Quality (Surface and Ground)	Not Affected (Sediment, Temperature and Chemical/Nutrient Contamination)	The WA identified water temperature and sediment as likely water quality problems. Willamina Creek is listed as water quality limited due to phosphorus and fecal coliform bacteria. The proposed action would not have any affect on chemical or nutrient contamination The proposed action is expected to maintain the current average canopy and shade over streams, and therefore would not alter water temperatures. Timber harvest and road construction is not expected to result in additional sediment or turbidity in streams. Although the haul roads have the potential to introduce sediment in small quantities to streams, this increase is expected to be minimal due to the design feature of dry season use. The overall effects of the proposed action on water quality are expected to be neutral in the short-term and long-term, and the State of Oregon water quality standards would not be exceeded.
Wetlands (Executive Order 11990)	Not Present	The proposed action would not result in the destruction, loss or degradation of any wetland. As such, the proposed action is consistent with Executive Order 11990.
Wild and Scenic Rivers	Not Present	
Wilderness	Not Present	

Table 2. Other Elements of the Environment. This table lists other elements of the environment which are subject to requirements specified in law, regulation, policy, or management direction and the interdisciplinary teams predicted environmental impact per element if the alternatives described in Chapter 2 of the Environmental Assessment were implemented.

Other Elements of the Environment	Status 1/ Not Present 2/ Not Affected 3/ Affected	Interdisciplinary Team Remarks 1/ If not affected, why? 2/ If affected, develop cause/effect statement, unit of measure, and if applicable, design features not already identified in Appendix C of the RMP to reduce or avoid environmental harm
Coastal Zone (Oregon Coastal Management Program)	Not Affected	The proposed action is not located within Oregon’s Coastal Zone boundary.
Essential Fish Habitat (Magnuson-Stevens Fisheries Conservation and Management Act)	Affected (Coho salmon) Not Present (Chinook salmon)	<u>Affected:</u> The proposed action may affect EFH (Essential Fish Habitat) for Coho salmon. The unit of measure is a narrative that describes whether the action would result in adverse effects to EFH. <i>Refer to Section 3.2 of the EA for a discussion of the affected environment and environmental effects of the alternatives related to this element of the environment.</i> <u>Not Present:</u> The proposed action would not affect EFH for Upper Willamette Chinook salmon. Chinook salmon are not known to have ever utilized the streams in or adjacent to the project area (e.g., Willamina Creek) as habitat.
Fire Hazard/Risk	Not Present	There are no known fire hazards located in the project area.
Forest Productivity	Affected	The proposed action would accelerate the development of some late-successional forest structural features. The unit of measure is a narrative. <i>Refer to Section 3.4 of the EA for a discussion of the affected environment and environmental effects of the alternatives related to this element of the environment.</i>
Land Uses (right-of-ways, permits, etc)	Not Affected	The proposed action would not have adverse or beneficial effects to any existing land use.
Mineral Resources	Not Present	
Recreation	Not Affected	The primary recreational use occurring within the proposed project area is hunting. Although the proposed action may displace some hunters during actual logging operations, the action would not preclude hunting in other areas. As such, the proposed action would not affect this environmental element.
Rural Interface Areas	Not Present	
Special Areas (not including ACEC, RMP pp. 33-35)	Not Present	
Special Status Species (not including T/E): Fish Species/Habitat	Affected	There may be sediment input into streams along proposed haul routes that may have an affect on Bureau Sensitive fish species and habitat. The unit of measure is a narrative that describes whether the action would result in a trend toward federal listing or need to elevate the level of concern. <i>Refer to Section 3.2 of the EA for a discussion of the affected environment and environmental effects of the alternatives related to this element of the environment.</i>
Special Status Species (not including T/E): Plant Species/Habitat	Not Present/ Not Affected	Surveys were conducted throughout the proposed project area and no Special Status Species were found.

Table 2. Other Elements of the Environment. This table lists other elements of the environment which are subject to requirements specified in law, regulation, policy, or management direction and the interdisciplinary teams predicted environmental impact per element if the alternatives described in Chapter 2 of the Environmental Assessment were implemented.

Other Elements of the Environment	Status 1/ Not Present 2/ Not Affected 3/ Affected	Interdisciplinary Team Remarks 1/ If not affected, why? 2/ If affected, develop cause/effect statement, unit of measure, and if applicable, design features not already identified in Appendix C of the RMP to reduce or avoid environmental harm
Special Status Species (not including T/E): Wildlife Species/Habitat	Affected (Upland, dispersal habitat of Red-legged frog) Not Present or Not Affected (All other species)	<u>Affected:</u> Only impacts to wildlife SSS or their habitat includes temporary adverse impacts to the upland, dispersal habitat of red-legged frog. The unit of measure is a narrative that describes whether the action would result in a trend toward federal listing or need to elevate the level of concern. <i>Refer to Section 3.3 of the EA for a discussion of the affected environment and environmental effects of the alternatives related to this element of the environment.</i> <u>Not present or not affected:</u> All Other Wildlife SSS Specialist Report: Biological Evaluation of Wildlife Resources prepared May 26, 2004.
Soil (productivity, erodibility, mass wasting, etc.)	Affected	The proposed action will result in soil compaction/disturbance that may reduce soil productivity. The unit of measure is a narrative description of soil compaction/disturbance and productivity. <i>Refer to Section 3.5 of the EA for a discussion of the affected environment and environmental effects of the alternatives related to this element of the environment.</i>
Visual Resources	Not Affected	The proposed project area, with the exception of treatment Unit 24-1, is located within the Class 4 VRM (Visual Resource Management) category which allows for major modification of the existing character of the landscape. Treatment Unit 24-1 is located within Class 2 VRM which provides for retaining the existing character of the landscape. The proposed action is consistent with these visual resource management objectives.
Water Resources (not including water quality)	Not Affected	The beneficial uses for the analysis area include: public and domestic water supply, industrial water supply, irrigation, livestock watering, anadromous fish passage, salmonid fish spawning, resident fish and aquatic life, wildlife and hunting, fishing, boating, water contact recreation, aesthetic quality and hydropower. The City of Willamina has water rights for surface water in the analysis area. The proposed action would increase the amount of impermeable surface in the watershed by up to 18 acres (Chapter 3.6.2.1); however the action would not result in a measurable increase in base flows over the existing condition. The elevation for rain on snow events is often identified as 2300 feet. Snow does not usually accumulate in the Coast Range at this elevation. Since the proposed action is thinning and all units are below 2300 feet, there is not expected to be any effects to peak flows. Transpiration rates in the stands after thinning are not expected to be notably different after thinning because post-harvest stands will still have 76-105 trees per acre. Additionally, there would be no net increase in roads within the watershed resulting from the proposed action, nor would there be roads built on unstable slopes or within Riparian Reserves. In conclusion, the proposed action is not anticipated to have measurable effects on watershed hydrology and would not affect municipal and domestic water use.

Table 3. Aquatic Conservation Strategy Summary. This table lists the four components of the Aquatic Conservation Strategy (RMP pp. 5-7) and the interdisciplinary teams predicted environmental impact per component if the alternatives described in Chapter 2 of the Environmental Assessment were implemented.

Components	Effect	Remarks /References
Riparian Reserves	None	Actions occurring within RR (Riparian Reserves) are described in Chapter 2.1 of the EA. Approximately four acres (two within Unit 9-1; two within Unit 10-2) would be treated by thinning and would use the same prescriptions as the adjacent uplands to attain desired vegetation characteristics. There would be no new road construction in RR; however in Unit 9-1 yarding equipment would be allowed to use two old existing skid trails to yard trees from two acres. The location is 320-440 feet from the stream and an existing road is located between the skid road and the stream. This thinning would occur above the stream influence zone and would not have any effect on stream temperature or large woody debris recruitment, nor is it expected to result in any measurable change in sediment to the stream or to fish habitat.
Key Watershed	None	The proposed action is not located in a key watershed.
Watershed Analysis	None	<i>Deer Creek, Panther Creek, Willamina Creek, and South Yamhill Watershed Assessment, May 1998.</i>
Watershed Restoration	None	Although the proposed action is not a component of the resource area's watershed restoration program, it will not have an adverse effect on restoration efforts.