Cold Springs Late Successional Reserve Enhancement Environmental Assessment and Finding of No Significant Impact

Environmental Assessment Number OR-080-05-12

February 19, 2008

United States Department of the Interior
Bureau of Land Management
Oregon State Office
Salem District
Marys Peak Resource Area

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Abstract: This environmental assessment (EA) discloses the predicted environmental effects of two projects on federal land located in Township 9 South, Range 7 West, Section 3, Willamette Meridian and within the Luckiamute River Watershed. Project 1 (Density Management) is a proposal to enhance conditions for the development of late seral forest habitat on approximately 175 acres of early to mid seral forest land. Project 2 (Snag/Coarse Woody Debris Creation) is a proposal to create snags/coarse woody debris for terrestrial and botanical habitat improvement on approximately 7 acres of mid seral forest land. The actions would occur within Late-Successional Reserve (LSR) and Riparian Reserve (RR) Land Use Allocations (LUAs) within the North Coast Adaptive Management Area.

As the Nation's principal conservation agency, the Department of Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering economic use of our land and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interest of all people. The Department also has a major responsibility for American Indian reservation communities and for people who live in Island Territories under U.S. administration.

BLM/OR/WA/PT-07/003+1792

FINDING OF NO SIGNIFICANT IMPACT

Introduction

The Bureau of Land Management (BLM) has conducted an environmental analysis (Environmental Assessment Number OR-080-05-12) for a proposal to implement two projects as follows. *Project 1*: conduct density management on approximately 175 acres of 45 to 55 year-old stands in Late-Successional Reserve (LSR) and Riparian Reserve (RR) Land Use Allocations (LUAs) within the North Coast Adaptive Management Area to increase structural diversity. *Project 2*: create snags and coarse woody debris on approximately 7 acres of 75 year-old forest for terrestrial and botanical habitat improvement. The projects are on BLM-managed lands in Township 9 South, Range 7 West, Section 3, Willamette Meridian.

Implementation of the proposed action will conform to management actions and direction contained in the attached *Cold Springs Late Successional Reserve Enhancement Environmental Assessment* (Cold Springs LSR Enhancement EA). The Cold Springs LSR Enhancement EA is attached to and incorporated by reference in this Finding of No Significant Impact (FONSI) determination. The analysis in this EA is site-specific and supplements analyses found in the *Salem District Proposed Resource Management Plan/Final Environmental Impact Statement*, September 1994 (RMP/FEIS) (EA p. 3). The Cold Springs LSR Enhancement projects have been designed to conform to the *Salem District Record of Decision and Resource Management Plan*, May 1995 (RMP) and related documents which direct and provide the legal framework for management of BLM-managed lands within Marys Peak Resource Area (EA pp. 3-4). Consultation with U.S. Fish and Wildlife Service and National Oceanic Atmospheric Administration National Marine Fisheries Service is described in Section 6.0 of the EA.

The EA and FONSI will be made available for public review January 30, 2008 to February 28, 2008. The notice for public comment will be published in a legal notice by the *Polk County Itemizer Observer* newspaper. Comments received by the Marys Peak Resource Area of the Salem District Office, 1717 Fabry Road SE, Salem, Oregon 97306, on or before February 28, 2008 will be considered in making the decisions for this project.

Finding of No Significant Impact

Based upon review of the Cold Springs LSR Enhancement EA and supporting documents, I have determined that the 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 site-specific environmental effects meet the definition of significance in context or intensity as defined in 40 CFR 1508.27. Therefore, supplemental or additional information to the analysis done in the RMP/FEIS through a new environmental impact statement is not needed. This finding is based on the following information:

Context: Potential effects resulting from the implementation of the proposed action have been analyzed within the context of the Luckiamute River 5th-field Watershed and the project area boundaries. The proposed action would occur on approximately 182 acres of BLM LSR and RR LUA land within the North Coast Adaptive Management Area, encompassing less than 0.2 percent of the forest cover within the Luckiamute River Watershed [40 CFR 1508.27(a)].

Intensity:

1. *Projects 1 and 2* are unlikely to a have any significant adverse impacts on the affected elements of the environment (EA section 3.1 - vegetation, wildlife, soils, water, fisheries/aquatic habitat, and fuels/air quality resources).

The effects of density management and snag/coarse woody debris creation are unlikely to have significant adverse impacts on these resources [40 CFR 1508.27(b) (1)] for the following reasons:

- Vegetation and Forest Stand Characteristics *(EA section 3.2.1):* 1/ No special status vascular plant, lichens, bryophytes or fungi species would be affected. 2/ Noxious Weeds - No significant increase in the noxious weeds identified during the field surveys is expected to occur. Any increase that does occur should be short lived due to re-vegetation by native species in areas of high light and ground disturbing activities. 3/ No late successional stands have been identified in the affected environment.

- Soils, Hydrology, and Fisheries *(EA sections 3.2.3 to 3.2.5)*: All new road construction would occur outside of Riparian Reserves on gentle slopes with stable, vegetated surfaces. Gentle to moderate slope gradients in project areas provide little opportunity for surface water to flow. The stream protection zones [SPZs (minimum 50 feet on perennial and intermittent streams)] would prevent any overland flow and sediment generated by logging from reaching streams. The SPZs would maintain the current vegetation in the primary shade zone and treatments would retain most of the current levels of shading in the secondary shade zone. Soil compaction is limited to no more that 10 percent of each unit's acreage. Road work (including culvert replacement/installations) would take place during the dry season.

- Wildlife (*EA section 3.2.2*): 1/ Existing snags and coarse woody debris (CWD) would be retained. The few large (greater than 20 inches diameter and greater than 15 feet tall) snags that could be felled for safety or knocked over by falling and yarding operations would be retained as CWD. 2/ No suitable or dispersal habitat for any BLM special status species known or likely to be present would be lost or downgraded. Therefore, the projects would not contribute to the need to list any BLM special status species. 3/ Thinning would not significantly change species richness (a combination of species diversity and abundance) of the migratory and resident bird community. No species would be become extirpated in stands as a result of thinning, though some less common species would be likely to enter thinned stands immediately in response to reduced canopy closure and tree density.

- Air Quality and Fire Hazard/Risk (*EA section 3.2.6*): The thinning would create an increased fire hazard risk from the slash but this would be mitigated by treating slash along open roads where the opportunities for ignition are greatest. After 3 to 5 years, the fine fuels would be decayed in most of the units and the risk of surface fire would decrease to near current levels. The thinning would decrease the risk of a canopy fire. Piling and burning slash at landings and in some fuel treatment areas would have a very short duration impact on air quality; but strict adherence to smoke management regulations would result in little or no impact to the public.

With the implementation of the project design features described in EA section 2.2.2, potential effects to the affected elements of the environment are anticipated to be site-specific and/or not measurable (i.e. undetectable over the watershed, downstream, and/or outside of the project areas). The projects are designed to meet RMP standard and guidelines, modified by subsequent direction (EA section 1.3); and the effects of these projects would not exceed those effects described in the RMP/FEIS [40 CFR 1508.27(b) (1), EA sections 3.1].

2. *Projects 1 and 2 would not affect*:
   - ✓ Public health or safety [40 CFR 1508.27(b)(2)];
   - ✓ Unique characteristics of the geographic area [40 CFR 1508.27(b)(3)] because there are no historic or cultural resources, parklands, prime farmlands, wild and scenic rivers, wilderness, or ecologically critical areas located within the project area (EA section 3.1);
   - ✓ 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 [40 CFR 1508.27(b)(8)] (EA section 3.1).

3. *Projects 1 and 2* are not unique or unusual. The BLM has experience implementing similar actions in similar areas without highly controversial [40 CFR 1508.27(b)(4)], highly uncertain, or unique or unknown risks [40 CFR 1508.27(b)(5)].

4. *Projects 1 and 2* do not set a precedent for future actions that may have significant effects, nor do they represent a decision in principle about a future consideration [40 CFR 1508.27(b)(6)]. The BLM has experience implementing similar actions in similar areas without setting a precedent for future actions.

5. The interdisciplinary team evaluated *Projects 1 and 2* in context of past, present and reasonably foreseeable actions [40 CFR 1508.27(b)(7)]. Potential cumulative effects are described in the attached EA. These effects are not likely to be significant because of the project's scope (effects are likely to be too small to be measurable), scale (project area of 182 acres, encompassing less than 0.2 percent of the forest cover within the Luckiamute River watershed), and duration [direct effects would occur over a maximum period of four to six years (EA section 3.2)].

6. *Projects 1 and 2* are not expected to adversely affect endangered or threatened species or habitat under the Endangered Species Act (ESA) of 1973 [40 CFR 1508.27(b)(9)].

   Wildlife:
   - The consultation with the U. S. Fish and Wildlife Service (USFWS) concurred with the determination of "No Effect" to the northern spotted owl and marbled murrelet because no suitable habitat is present within the project area.
   - Designated critical habitat (Critical Habitat Unit OR-45) for the spotted owl is not likely be adversely affected because less than 3.7 percent of the dispersal habitat within the Critical Habitat Unit would be affected; and the habitat would continue to function as dispersal habitat after thinning is completed.
   - This proposed action has been designed to incorporate all appropriate design standards set forth in the biological assessment to ensure compliance with the terms and conditions to be included within the pending biological opinion.

Fish:
A determination has been made that these proposed projects 'May Affect' UWR (Upper Willamette River) steelhead trout. Proposed actions would comply with ESA Section 7 *Informal Consultation for the 2007-2009 Thinning Timber Sales Programmatic on the Mt. Hood and Willamette National Forests and portions of the Eugene and Salem Bureau of Land Management Districts, 20 Watersheds.*

A determination has been made that these proposed projects would have 'no effect' on Chinook salmon and Oregon chub. Generally, the 'no effect' determination is based on the distance upstream of project activities (approximately 12 miles in the Luckiamute River from ESA listed fish habitat) and project design criteria that include no harvest activity within SPZs and post-project leave tree densities of 59 to 77 trees per acre.

Protection of EFH (Essential Fish Habitat) as described by the Magnuson/Stevens Fisheries Conservation and Management Act and consultation with NOAA (National Oceanic Atmospheric Administration) NMFS (National Marine Fisheries Service) is required for all projects which may adversely affect EFH of Chinook and coho salmon. The proposed actions in the Cold Springs LSR Enhancement EA are not anticipated to adversely affect EFH. This determination is primarily due to the distance of EFH from treatment areas and proposed haul routes.

7. *Projects 1 and 2* do not violate any known federal, state, or local law or requirement imposed for the protection of the environment [40 CFR 1508.27(b)(10)].

Prepared by: Gary Humbard, Team Lead — Date: 1/22/08

Reviewed by: Dan Schreinderfer, Natural Resource Specialist — Date: 1/22/08

Approved by: Trish Wilson, Field Manager, Marys Peak Resource Area — Date: 1/22/08

Glossary: Abbreviations, Acronyms, and Terms

ACEC	Area of Environmental Concern. Lands where special management attention is needed to protect and prevent irreparable damage to important values, resources or other natural systems or processes.
ACS	Aquatic Conservation Strategy. A set of objectives developed to restore and maintain the ecological health and aquatic habitat of watersheds.
ACS/FSEIS	Final Supplemental Environmental Impact Statement, Clarification of Language in the 1994 Record of Decision for the Northwest Forest Plan National Forests and Bureau of Land Management Districts Within the Range of the Northern Spotted Owl, October 2003.
Airshed	A geographic area that shares the same air mass due to topography, meteorology, and climate.
Alternative	Proposed project (plan, option, choice)
Anadromous Fish	Species that migrate to oceans and return to freshwater to reproduce.
Basal Area (BA)	The cross section area of a tree measured in square feet.
BLM	Bureau of Land Management. Federal agency within the Department of Interior responsible for the management of 275 million acres.
BMP	Best Management Practice(s). Design features and mitigation measures to minimize environmental effects.
BO	Biological Opinion. The document resulting from formal consultation that states the opinion of the Fish and Wildlife Service or National Marine Fisheries Service as to whether or not a federal action is likely to jeopardize the continued existence of listed species or results in destruction or adverse modification of critical habitat.
CEQ	Council of Environmental Quality, established by the National Environmental Policy Act of 1969
CEQ Regulations	Regulations that tell how to implement NEPA
Crown	The portion of a tree with live limbs.

Cumulative Effects	Past, present, and reasonably foreseeable effects added together (regardless of who or what has caused, is causing, and might cause those effects)
CWD	Coarse Woody Debris refers to a tree (or portion of a tree) that has fallen or been cut and left in the woods. Usually refers to pieces at least 20 inches in diameter as described in Northwest Forest Plan.
DBHOB	Diameter at breast height outside bark and all.
EA	Environmental Assessment. A systematic analysis of site-specific activities used to determine whether such activities have a significant effect on the quality of the human environment.
EFH	Essential Fish Habitat. Anywhere Chinook or coho salmon could naturally occur.
EIS	Final Supplemental Environmental Impact Statement to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines, January 2004.
Ephemeral Streams	Streams that contain running water only sporadically, such as during and following storm events.
ESA	Endangered Species Act. Federal legislation that ensures federal actions would not jeopardize or elevate the status of living plants and animals.
FEIS	Final Environmental Impact Statement
FSEIS	Final Supplemental Environmental Impact Statement
Fish and Wildlife Service	FWS. A division within the U.S. Department of the Interior
Fish-Bearing Stream	Any stream containing any species of fish for any period of time.
FLPMA	Federal Land Policy Management Act (1976)
FONSI	Finding of No Significant Impact
Fuel Loading	The amount of combustible material present per unit of area, usually expressed in tons per acre (dry weight of burnable fuel)
Girdle	Removal of the inner bark from the entire circumference of a tree. This typically results in the death of the tree within 3 to 5 years.
Ground Base Yarding	Utilizing equipment operating on the surface of the ground to move trees or logs to a landing where they can be processed or loaded.
Harvester/Forwarder Equipment (cut to length system)	A logging system which uses "harvesters" to fell, strip the tree of limbs, and then cut it into logs, paired with a tracked "forwarder" that has a long reach, gathers up the logs and transfers them to a log truck. Many of these systems are known for their low PSI (pounds per square inch) impact to the ground.

Interdisciplinary Team	IDT. A group of individuals assembled to solve a problem or perform a task.
Intermittent Stream	Any nonpermanent flowing drainage feature having a definable channel and evidence of scour or deposition. Includes ephemeral streams if they meet these two criteria.
Invasive Plant	Any plant species that is aggressive and difficult to manage.
Landing	Any designated place where logs are laid after being yarded and are awaiting subsequent handling, loading and hauling
Late-Successional	Forest conditions consisting of larger trees and multiple canopy layers that support numerous plant and animal species.
LSR	Late-Successional Reserve (a NWFP designated land use allocation) Lands to be managed or maintained for older forest characteristics.
LSRA	Late-Successional Reserve Assessment for Oregon Coast Province – Southern Portion
LUA	Land Use Allocation. NWFP designated lands to be managed for specific objectives
LWD	Large Woody Debris. Woody material found within the bankfull width of the stream channel and is specifically of a size 23.6 inches diameter by 33 feet length (per ODFW - Key Pieces)
Native Plant	Species that historically occurred or currently occur in a particular ecosystem and were not introduced
NCAMA	North Coast Adaptive Management Area.
NEPA	National Environmental Policy Act (1969)
NMFS	National Marine Fisheries Service. Federal agency within NOAA which is responsible for the regulation of anadromous fisheries in the U. S.
NOAA	National Oceanic Atmospheric Administration. Agency within the Department of Commerce responsible for monitoring and regulating resources associated with the oceanic and atmospheric environments
Non-Native Plant	Any plant species that historically does not occur in a particular ecosystem
Non-Point	No specific site
Noxious Weed	A plant species designated by federal or state law as generally possessing one or more of the following characteristics: aggressive and difficult to manage; parasitic; a carrier or host of serious insects or diseases; or non-native, new, or not common to the United States.
NWFP	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 Related Species within the Range of the Northern Spotted Owl (1994) (Northwest Forest Plan).
NWFP/FSEIS	Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species within the Range of the Northern Spotted Owl, February 1994
ODEQ	Oregon Department of Environmental Quality
ODFW	Oregon Department of Fish and Wildlife. Oregon State Agency responsible for the management and protection of fish and wildlife.
Oregon Smoke Management Plan	The State of Oregon's plan for implementing the National Clean Air Act in regards to burning of forest fuels.
ORGANON	A computer based program used to model projected tree growth, stand density and crown ratio using existing stand tree species and size.
Perennial Stream	A stream that typically has running water on a year-round basis.
RMP	Salem District Record of Decision and Resource Management Plan (1995)
RMP/FEIS	Salem District Proposed Resource Management Plan / Final Environmental Impact Statement (1994).
Road Decommissioning	Road is closed to vehicular traffic. Road is waterbarred. May include removal of culverts, ripping and seeding of roadbed. Road prism remains intact for future use.
Road Reconstruction	Work done to restore a damaged or deteriorated road to a usable condition and possibly a new design standard. May include road realignment, slide and fill failure repair and/or structure upgrades. Reconstruction generally involves a higher degree of engineering than basic road improvement/renovation work.
Road Renovation	Work done to an existing road which restores it to its original design standard. May include blading and shaping of a roadway, clearing brush from cut and fill slopes, cleaning or replacing culverts, and applying rock surfacing material to depleted surfaces. Generally these roads are driveable prior to work commencing.
ROD	Record of Decision. Document that approves decisions to the analyses presented in the FEIS.
RR	Riparian Reserves (NWFP land use allocation). Lands on either side of streams or other water feature designated to maintain or restore aquatic habitat.

Rural Interface	BLM-managed lands within ½ mile of private lands zoned for 1 to 20-acre lots. Areas zoned for 40 acres and larger with homes adjacent to or near BLM-managed lands.
Seral	One stage of a series of plant communities that succeed one another.
Silviculture	The manipulation of forest stands to achieve desired structure.
Skid Trails	Path through a stand of trees on which ground based equipment operates.
Skyline Yarding	Moving trees or logs using a cable system to a landing where they can be processed or loaded. During the moving process, a minimum of one end of trees and logs are lifted clear of the ground
Snag	A dead, partially dead, or defective tree at least 10 inches DBHOB and 6 feet tall.
Soil Compaction	An increase in bulk density and a decrease in soil porosity resulting from applied loads, vibration, or pressure.
Soil Productivity	Capacity or suitability of a soil, for establishment and growth of a specified crop or plant species, primarily through nutrient availability.
SPZ	Stream Protection Zone is a buffer along streams and identified wet areas where no material would be removed and heavy machinery would not be allowed. The SPZ is measured to the slope break, change in vegetation, or 50 feet from the channel edge which ever is greater.
Standards and Guidelines	SandG. The primary instructions for land manager. Standards address mandatory actions, while guidelines are recommended actions necessary to a land management decision.
Succession	The stages a forest stand makes over time as vegetation competes and natural disturbances occur. The different stages in succession are often referred to as seral stages.

Topped	Completely severing the upper portion of a standing live tree. The typical purpose for this action is to enhance wildlife habitat by creating snags from standing live trees.
Turbidity	Multiple environmental sources that causes water to change conditions.
USDI	United States Department of the Interior
USEPA	United States Environmental Protection Agency
VRM	Visual Resource Management, all lands are classified from 1 to 4 based on visual quality ratings and the amount of modification allowed in the landscape.
Waterbars	A ridge of compacted soil or loose rock or gravel constructed across disturbed rights-of-way and similar sloping areas.
Watershed	The drainage basin contributing water, organic matter, dissolved nutrients, and sediments to a stream or lake.
Weed	A plant considered undesirable and that interferes with management objectives for a given area at a given point in time.
Windthrow	Trees uprooted or blown over by natural events.
Yarding Corridors	Corridors cut through a stand of trees to facilitate Skyline yarding. Cables are strung in these corridors to transport logs from the woods to the landing.

COLD SPRINGS LATE SUCCESSIONAL RESERVE ENHANCEMENT ENVIRONMENTAL ASSESSMENT

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1.0 INTRODUCTION

1.1 Projects Covered in this EA

Two projects will be analyzed in this EA (Environmental Assessment):

- Project 1, Density Management, is a proposal to cut and remove a portion of the trees through a timber sale on approximately 175 acres of 45 to 55 year old stands within LSR (Late Successional Reserve) and RR (Riparian Reserve) LUAs (Land Use Allocations).
- Project 2, Snag/ CWD (Coarse Woody Debris) Creation, is a proposal to create large, hard snags and CWD structure on approximately seven acres within LSR LUA which is lacking in the project area.

1.1.1 Relationship between Projects

Projects 1 and 2 are within the same section and are in the Luckiamute River Watershed.

1.2 Project Area Locations

The project areas are located approximately 13 air miles southwest of Dallas, Oregon, in Polk County on forested land managed by the Marys Peak Resource Area, Salem District of the BLM (Bureau of Land Management). The project areas are within the Luckiamute River Watershed and are within Township 9 South, Range 7 West, Section 3, Willamette Meridian (Map 1).

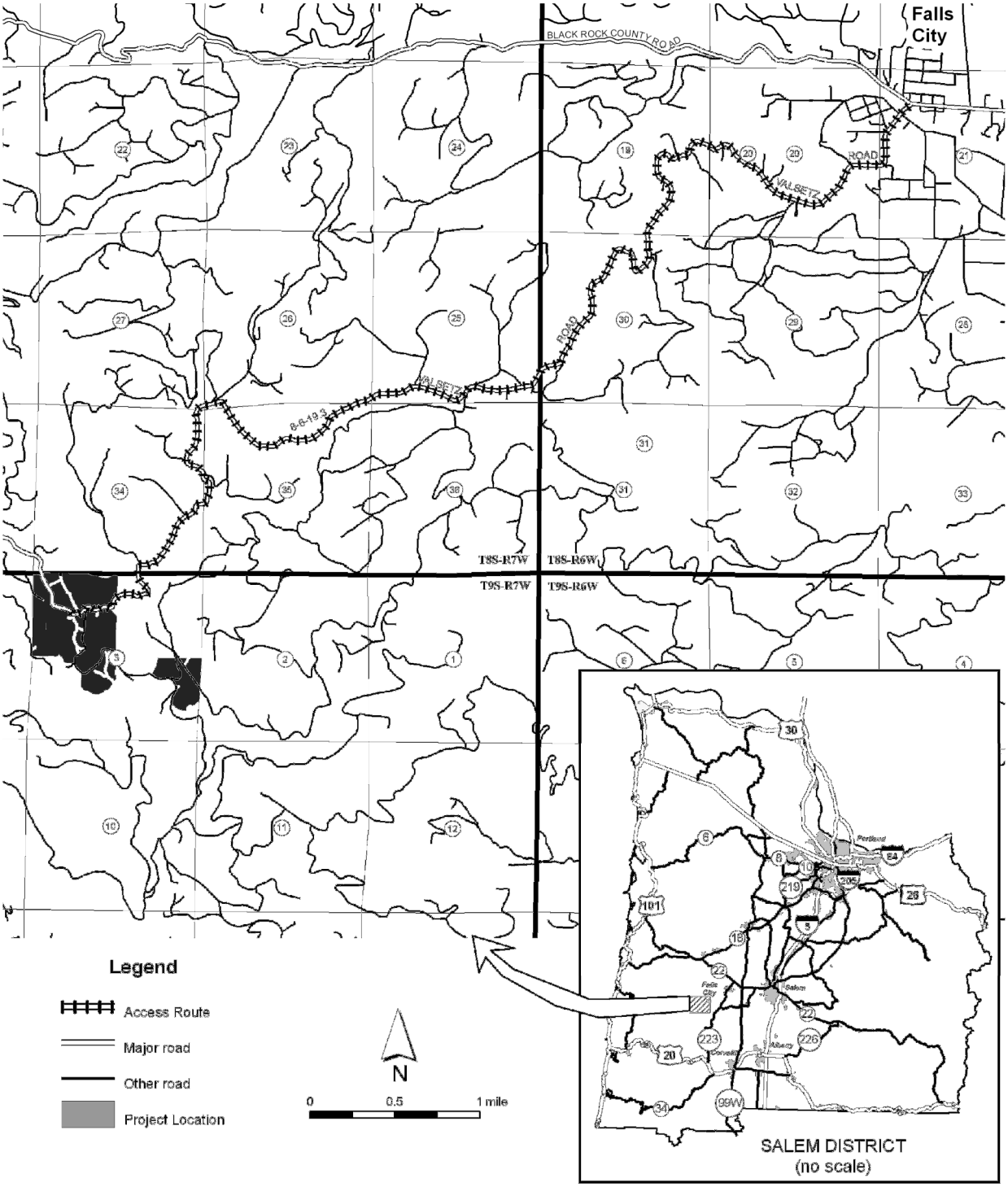
December 6, 2007

United States Department of the Interior
BUREAU OF LAND MANAGEMENT

Map #1

Cold Springs LSR Enhancement Location Map

T.9 S., R. 7 W., Section 3 - SALEM DISTRICT - OREGON



1.3 Conformance with Land Use Plans, Policies, and Programs

The Cold Springs LSR Enhancement projects have been designed to conform to the following documents, which direct and provide the legal framework for management of BLM lands within the Salem District:

- *Salem District Record of Decision and Resource Management Plan*, May 1995 (RMP): The RMP has been reviewed and it has been determined that the Cold Springs LSR Enhancement projects conform to the land use plan terms and conditions (e.g. complies with management goals, objectives, direction, standards and guidelines) as required by 43 CFR 1610.5 (BLM Handbook H1790-1);
- *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 (the Northwest Forest Plan, or NWFP);
- *2007 Record of Decision To Remove the Survey and Manage Mitigation Measure Standards and Guidelines from Bureau of Land Management Resource Management Plans Within the Range of the Northern Spotted Owl* (July 2007). The decision is consistent with the Northwest Forest Plan, including all plan amendments in effect on the date of the decision. The EA analysis here tiers to that of the Northwest Forest Plan and supporting environmental impact statements in effect on the date of the decision.

The analysis in the Cold Springs LSR Enhancement EA is site-specific and supplements analyses found in the *Salem District Proposed Resource Management Plan/Final Environmental Impact Statement*, September 1994 (RMP/FEIS) and the 2007 *Final Supplement to the 2004 Final Supplemental Environmental Impact Statement to Remove or Modify The Survey and Manage Mitigation Measure Standards and Guidelines* (June 2007). The RMP/FEIS includes the analysis from the *Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species within the Range of the Northern Spotted Owl,* February 1994 (NWFP/FSEIS).

The proposed action is located within the coastal zone as defined by the Oregon Coastal Management Program. This proposal is consistent with the objectives of the program, and the State planning goals which form the foundation for compliance with the requirements of the Coastal Zone Act. Management actions/directions found in the RMP were determined to be consistent with the Oregon Coastal Management Program.

The following documents provided additional direction in the development of the Cold Springs LSR Enhancement projects:

- *Late Successional Reserve Assessment for Oregon's Northern Coast Range Adaptive Management Area* [LSRA (Late-Successional Reserve RO269, RO270 and RO807)], 1998;
- *Rowell, Mill and Rickreall Creek, and Luckiamute River Watershed Analysis* (MEGAWA), 1998;
- *Luckiamute/Ash Creek/American Bottom Watershed Assessment* (LAAWA), 2004;

- *Delineation and Management of Reserve Pair Areas within Oregon's Northern Coast Range Adaptive Management Area*, 2000.

All of the above documents, along with the Cold Springs LSR Enhancement interdisciplinary team (IDT) reports (EA section 7.1), are hereby incorporated by reference in the Cold Springs LSR Enhancement EA and available for review in the Salem District Office. Additional information about the proposed projects are available in the Cold Springs LSR Enhancement Project EA Analysis File (NEPA file), also available at the Salem District Office.

Survey and Manage Review

The Marys Peak Resource Area (RA) is aware of the August 1, 2005, U.S. District Court order in Northwest Ecosystem Alliance et al. v. Rey et al. which found portions of the *Final Supplemental Environmental Impact Statement to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines* (January, 2004) (EIS) inadequate. The RA is also aware of the recent January 9, 2006, Court order which:

- set aside the 2004 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) (2004 ROD) and
- reinstated the 2001 *Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measure Standards and Guidelines* (January, 2001) (2001 ROD), including any amendments or modifications in effect as of March 21, 2004.

The order further directs "Defendants shall not authorize, allow, or permit to continue any logging or other ground-disturbing activities....unless such activities are in compliance with the provisions of the 2001 ROD (as amended or modified as of March 21, 2004)".

The BLM is also aware of the November 6, 2006, Ninth Circuit Court opinion in Klamath-Siskiyou Wildlands Center et al. v. Boody et al., No. 06-35214 (CV 03-3124, District of Oregon). The court held that the 2001 and 2003 Annual Species Reviews (ASRs) regarding the red tree vole are invalid under the Federal Land Policy and Management Act (FLPMA) and National Environmental Policy Act (NEPA) and concluded that the BLM's Cow Catcher and Cotton Snake timber sales violate federal law.

This court opinion is specifically directed toward the two sales challenged in this lawsuit. The BLM anticipates the case to be remanded to the U.S. District Court for an order granting relief in regard to those two sales. At this time, the ASR process itself has not been invalidated, nor have all the changes made by the 2001-2003 ASR processes been vacated or withdrawn, nor have species been reinstated to the Survey and Manage program, except for the red tree vole. The court has not yet specified what relief, such as an injunction, will be ordered in regard to the Ninth Circuit Court opinion. Injunctions for NEPA violations are common but not automatic.

We do not expect that the litigation over the Annual Species Review process in Klamath-Siskiyou Wildlands Center et al. v. Boody et al will affect Projects 1 and 2 because the development and design of these projects exempt them from the Survey and Manage program. In Northwest Ecosystem Alliance et al. v. Rey et al the U.S. District Court modified its order on October 11, 2006, amending paragraph three of the January 9, 2006 injunction. This most recent order directs:

"Defendants shall not authorize, allow, or permit to continue any logging or other ground-disturbing activities on projects to which the 2004 ROD applied unless such activities are in compliance with the 2001 ROD (as the 2001 ROD was amended or modified as of March 21, 2004), except that this order will not apply to:

a. Thinning projects in stands younger than 80 years old;
b. Replacing culverts on roads that are in use and part of the road system, and removing culverts if the road is temporary or to be decommissioned;
c. Riparian and stream improvement projects where the riparian work is riparian planting, obtaining material for placing in-stream, and road or trail decommissioning; and where the stream improvement work is the placement large wood, channel and floodplain reconstruction, or removal of channel diversions; and
d. The portions of project involving hazardous fuel treatments where prescribed fire is applied. Any portion of a hazardous fuel treatment project involving commercial logging will remain subject to the survey and management requirements except for thinning of stands younger than 80 years old under subparagraph a. of this paragraph."

"On July 25, 2007, the Under Secretary of the Department of Interior signed a new *Record of Decision To Remove the Survey and Manage Mitigation Measure Standards and Guidelines from Bureau of Land Management Resource Management Plans Within the Range of the Northern Spotted Owl* that removed the survey and manage requirements from all of the BLM resource management plans (RMPs) within the range of the northern spotted owl. "In any case, these projects fall within at least one of the exceptions (exception a) listed in the modified October 11, 2006 injunction."

Compliance with the Aquatic Conservation Strategy

On March 30, 2007, the District Court, Western District of Washington, ruled adverse to the U. S. Fish and Wildlife Service (USFWS), National Oceanic and Atmospheric Administration (NOAA-NMFS) and USFS and BLM (Agencies) in *Pacific Coast Fed. of Fishermen's Assn. et al v. Natl. Marine Fisheries Service, et al and American Forest Resource Council,* Civ. No. 04-1299RSM (W.D. Wash)(PCFFA IV). Based on violations of the Endangered Species Act (ESA) and the National Environmental Policy Act (NEPA), the Court set aside:

- The USFWS Biological Opinion (March 18, 2004),
- The NOAA-Fisheries Biological Opinion for the ACS Amendment (March 19, 2004),
- The ACS Amendment Final Supplemental Environmental Impact Statement (FSEIS) (October 2003), and
- The ACS Amendment adopted by the Record of Decision dated March 22, 2004.

Previously, in *Pacific Coast Fed. Of Fishermen's Assn. v. Natl. Marine Fisheries Service,* 265 F.3d 1028 (9th Cir. 2001)*(PCFFA II)*, the United States Court of Appeals for the Ninth Circuit ruled that because the evaluation of a project's consistency with the long-term, watershed level ACS objectives could overlook short-term, site-scale effects that could have serious consequences to a listed species, these short-term, site-scale effects must be considered.

1.4 Decision Criteria/Project Objectives for Each Project

The Marys Peak RA Field Manager will use the following criteria/objectives in selecting the alternative to be implemented. The field manager would select the alternative that would best meet these criteria. The selected action would:

- Meet the purpose and need of the projects (EA section 1.6).

- Comply with the *Salem District Record of Decision and Resource Management Plan*, May 1995 (RMP) and related documents which direct and provide the legal framework for management of BLM lands within the Salem District (EA section 1.3).
- Would not have significant impact on the affected elements of the environment beyond those already anticipated and addressed in the RMP EIS.

1.5 Results of Scoping

A scoping letter, dated August 11, 2005, was sent to 42 potentially affected or interested individuals, groups, and agencies. Two responses were received during the scoping period.

Oregon Wild

Oregon Wild provided the following statements or requests:

- *Road building in LSR's and CHU's(critical habitat units) is inappropriate. Although temporary roads cause less impact, temporary roads still channelize water, cause erosion and conduct invasive weeds. Oregon Wild believes it is possible to conduct thinning without extensive new road construction. Some weed introduction and soil disturbance can be off-set by the thinning operation, however extensive road construction is not justified by a small restoration project.*
- *The BLM needs to complete a cost/benefit analysis for each new road to help inform the decision maker in balancing the costs and benefits of thinning and roading. The potential benefits of thinning must be weighed against the certain immediate costs of road construction. Even temporary roads degrade the ecosystem for years to come".*
- *Ground based logging equipment may cause significant soil disturbance that will not be offset by the intended benefits to the vegetation.*
- *The stands in the Cold Springs Late Successional Reserve Enhancement project are older than we would prefer to see the BLM working in.*
- *Oregon Wild supports variable density thinning where areas of light, moderate and dense patches are created along with ¼ to ½ acre gaps and dense patches. Please use variable density thinning and protect all remnant older trees and snags.*
- *The project would commercially thin stands in critical habitat for the northern spotted owl. No further degradation of habitat should occur.*
- *Impacts on old-growth species should be discussed in detail in the EA. This should include a functionality analysis of dispersal for the northern spotted owl and analysis of effects on other special status species listed in management plans. Special attention to snag habitat is needed.*

American Forest Resource Council

The American Forest Resource Council (AFRC) provided the following statements or requests:

- *AFRC would like to see all timber sales be economically viable. Encourage the BLM to utilize appropriate harvesting systems and remove adequate volumes per acre while achieving LSR objectives.*
- *Seasonal restrictions have a cost to the Purchaser and result in a lower bid cost. AFRC would encourage the BLM to allow winter hauling since this would provide wood for the mills and work for the loggers during the winter months.*

- *The AFRC would like to see flexibility for fuels treatments. Rather than specifying a method of accomplishing resource objectives, BLM should identify objectives and any limitations to resource disturbance. The purchaser could then identify the method they could implement given their particular employee skills and equipment mix.*
- *The AFRC would like to see thinning treatments with smaller (25 to60 feet) no cut buffers to achieve management objectives of moving the RR into Late-Successional forest faster. We encourage the BLM to maximize opportunities in the RR LUA.*

1.6 Purpose of and Need for Action

Project 1 (Density Management)

The BLM proposes forest management activities on approximately 175 acres. These activities would include: timber harvest, road construction, reconstruction and renovation, and coarse wood creation. The land use allocations for these activities are Late Succesional Reserve and Riparian Reserves.

The following describe the purpose for the action:

- **Late Successional Reserve LUA (RMP p. 15-19):** Manage forest stands and wildlife habitat in the LSR LUA to:
  - ✓ Develop, accelerate, and enhance late-successional forest conditions, which serve as habitat for late-successional forest species (LSRA, p. 81).
  - ✓ Plan and implement silvicultural treatments inside Late-Successional Reserves that are beneficial to the creation of late-successional habitat (RMP p. 16).

- **Riparian Reserve LUA (RMP pp. 9-15):** To manage early to mid seral stands in RR LUA to:
  - ✓ Accelerate the growth of trees to restore large conifers to Riparian Reserves (RMP p.7).
  - ✓ Enhance or restore habitat (e.g. CWD, snag habitat, in-stream large wood) for populations of native riparian-dependent plants, invertebrates, and vertebrate species (RMP p.7).
  - ✓ Improve structural and spatial stand diversity on a site-specific and landscape level in the long-term (RMP p. 11, 26, D-6).

- **Roads (RMP p. 62) :** Maintain and develop a safe, efficient and environmentally sound road system to:
  - ✓ Provide appropriate access for timber harvest and silvicultural practices used to meet the objectives above.
  - ✓ Provide for fire vehicle and other management access.
  - ✓ Reduce environmental effects associated with identified existing roads within the project area.

Early and mid seral forests in the project area are currently dominated by Douglas-fir with scattered and clumped western hemlock and various hardwoods where growth rates are declining and structural diversity is limited. These second-growth forests have stands characterized by a single-layered, dense, overstory canopy with little to no large wood remaining from the primary growth stand.

An existing road within the project area contains a culvert that is beyond its functional time span. The road lacks an adequate amount of culverts and rock to prevent environmental degradation during timber haul use.

There is a need to:

- Reduce stand densities using variable spacing methods.
- Create immediate terrestrial CWD.
- Construct and decommission (immediately after burning operations), approximately 4,600 feet of new ridgetop road and 1,500 feet of reconstructed road.
- Apply rock and install approximately six (6) ditch relief culverts and one (1) stream crossing culvert within an existing road.
- Offer a timber sale that can be sold and implemented through the market place.

The project would be implemented within a three year time period that could commence in February 2009.

Project 2 (Snag/CWD Creation)

The BLM proposes forest management activities on approximately 7 acres. These activities would include snag/CWD creation. The LUA for this activity is LSR.

The following describe the purpose for the action:

Manage developing forest stands and wildlife habitat in the LSR LUA so that:

- Late-successional forest conditions, which serve as habitat for late-successional forest species, can be developed, accelerated, and enhanced (LSRA p. 81).
- Plan and implement silvicultural treatments inside Late-Successional Reserves that are beneficial to the creation of late successional habitat (RMP p. 16).

The project area is currently lacking CWD and snags, particularly in decay class 1 and 2.

There is a need to:

- Increase snags and CWD, providing habitat for amphibians, small mammals, invertebrates, bryophytes and fungi.

The project would be implemented when funding becomes available.

2.0 Alternative Development

Pursuant to Section 102 (2) (E) of the National Environmental Policy Act (NEPA) 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." No unresolved conflicts were identified. Therefore, this EA will analyze the effects of Proposed action and No Action Alternatives.

2.1 Alternative 1 (No Action)

The BLM would not implement the projects at this time. This alternative serves to set the environmental baseline for comparing effects to the proposed action.

2.2 Alternative 2 (Proposed Action)

Project 1 (Density Management)
This project consists of density management treatments on approximately 175 acres of 45 to 55 year old stands within LSR and RR LUAs and would occur through a timber sale (Cold Springs LSR Enhancement). Approximately 175 acres would be thinned to a variable density (basal area ranging from 100 to 140 square feet/acre). Approximately four percent of the overall stand area would have gaps (approximately 0.50 to 1.0 acre) targeted for creation. Where feasible, these gaps would be created within areas having existing understory regeneration and would be scattered throughout the density management areas. Trees would be skyline yarded on approximately 122 acres and ground based yarded on approximately 53 acres.

Project 2 (Snag/CWD Creation)
Management of CWD would occur within a treatment boundary that includes an area of similar stand age and structural characteristics as proposed in Project 1. Trees would be selected for girdling, felling, or topping within defined boundaries that are adjacent to proposed harvest units (see Map 2). Up to five large trees per acre (trees having greater than average stand diameter, pre-treatment), and up to 20 small trees per acre (trees having less than average stand diameter, suppressed trees) would be selected for CWD treatment. Selected trees would be scattered individuals or occur in patches up to 1/4 acre in size, with no more than one such patch occurring per two acres of treatment area, while maintaining a canopy closure greater than 60 percent over the entire treatment area. Such treatments would be contingent on available funding and would be accomplished within three to five years after completion of Project 1 fuels treatment.

Project 1 (Density Management) Only

2.2.1 Connected Actions

1. **Road Work**:
   - **Road Construction/Reconstruction:** Approximately 4,600 feet of new road (ridge top locations) would be constructed. All new construction would be surfaced with road surface rock. Drain dips would be installed where cross drainage is necessary. Approximately 1,500 feet of existing road would be reconstructed. Approximately 500 feet of the reconstruction (R1 and R3) would be surfaced with rock while the remaining reconstruction (R2) would remain natural surface. All of the new construction and reconstruction would be decommissioned (waterbars installed, grass seed applied to exposed soil on cut/fill slopes and entrance blocked) upon completion of burning operations.
   - **Road Renovation:** Rock application, culvert installations on approximately six ditch relief locations, culvert replacement on one stream crossing location and one culvert removal would occur on approximately three miles of Road #9-7-3. Cut and fill slopes adjacent to culvert replacement/installments would be grass seeded and large rock would be placed as needed for erosion control. New culverts installed would meet 100-year flood design criteria.
   - **Development of a rock pit**: To supply rock for the proposed project and future projects, an existing rock source (Cold Springs Quarry) located in Township 9 South, Range 7 West, Section 11 (see EA Map #2) would be enlarged within RR LUA (RMP p. 52).

Activities would include renovating approximately 300 feet of quarry access road and blocking it after completion of operations.

2.2.2 Project Design Features (Project 1 Only)

The following is a summary of the design features that reduce the risk to the affected elements of the environment described in EA Section 3.1

Table 1: Season of Operation/Operating Conditions

Season of Operation or Operating Conditions	Applies to Operation	Objective
During periods of low tree sap flow, generally July 15-April 15	Yarding outside of road right-of-ways (skyline)	Protecting the bark and cambium of residual trees
During periods of low precipitation, generally May 1 to October 31	Road construction/reconstruction/renovation	Minimize soil erosion
During periods of low soil moisture, generally July 15 to October 15	Ground based yarding (Tractor)	Minimize soil erosion/compaction
During periods of low soil moisture, generally June 15 to October 31	Ground based yarding (Harvester/Forwarder) and (Hydraulic Loader) and machine chipping and/or piling	Minimize soil erosion/compaction
Generally year round	Timber hauling would be allowed year-round on rock surfaced roads except where the surface is deeply rutted or covered by a layer of mud and where runoff is causing a visible increase in turbidty to adjacent streams.	Minimize soil erosion/stream sedimentation
July 1 to September 30	In-stream work period (culvert installation and/or removal and replacement)	Minimize soil erosion/stream sedimentation
During periods of low precipitation, generally May 15 to October 15 May 1 to October 31	Rock quarry enlargement	Minimize soil erosion/stream sedimentation

Project Design Features by RMP Objectives

To minimize soil erosion as a source of sedimentation to streams and to minimize soil productivity loss from soil compaction, loss of slope stability or loss of soil duff layer:

- Ground based yarding with either crawler tractors, hydraulic loaders or harvester/forwarders would take place generally on slopes less than 35 percent.
- Within ground based yarding areas existing skid trails would be used as much as practical.
- Harvester/forwarder use would require that logs would be transported free of the ground. The equipment would be either rubber tired or track mounted and would have rear tires or tracks greater than 18 inches in width. Skid trails would be spaced approximately 60 feet apart and be less than 15 feet in width. Logging debris would be placed in skid trails in front of equipment to minimize the need for machines to drive on bare soil.
- Hydraulic loader use would require utilization of pre-designated skid trails spaced at least 40 feet apart where they intersect boundaries. Use of skid trails should be limited to one pass in and one pass out. Logging debris would be placed in skid trails in front of equipment to minimize the need for machines to drive on bare soil.

- Crawler tractor use would require the use of pre-designated skid trails spaced an average of 150 feet apart and be 10 feet or less in width.
- Waterbars would be constructed where they are determined to be necessary by the contract administrator.
- In the skyline yarding areas, one end suspension of logs would be required over as much of the areas as possible to minimize soil compaction, damage to reserve trees, and disturbance. Yarding corridors would average approximately 150 feet apart where they intersect boundaries and be 15 feet or less in width. Lateral yarding up to 75 feet from the skyline using an energized locking carriage would be required.
- In the skyline yarding areas, approximately nine acres would require multi-span yarding (special yarding area, see Map #2) to achieve one-end suspension.
- All large areas of exposed mineral soil (roads to be constructed, cat/skid roads, landings), as determined by the contract administrator would be grass seeded with Oregon Certified (blue tagged) red fescue (*Festuca rubra*) as a rate equal to 40 pounds per acre or sown/planted with other native species as approved by the resource area botanist.
- During periods of heavy rainfall, the contract administrator may restrict log hauling where the road surface is deeply rutted or covered by a layer of mud and where runoff from that road segment is causing a visible increase in turbidity to adjacent streams. To minimize water quality impacts, the purchaser may also be required to install silt fences, barkbags, or additional road surface rock.
- All logging and road activities would utilize the Best Management Practices (BMPs) required by the Federal Clean Water Act (as amended by the Water Quality Act of 1987) (RMP Appendix C pp. C-1 through C-10).

To contain and/or reduce noxious weed infestations on BLM-managed lands using an integrated pest management approach:

- All soil disrupting equipment moved into the project area from outside the north and central Coast Range Physiographic Province (see map in Appendix B) or moved into the project area from known Oregon Department of Agriculture "A" designated weed infestation areas would be required to be clean of dirt and vegetation as directed by the contract administrator.

To meet the objectives of the Aquatic Conservation Strategy (ACS) Component #1 (Riparian Reserves):

- Stream protection zones (SPZs) where no cutting and/or yarding is permitted (except below the culvert removal site (Road #9-7-3), would be established along all streams and identified wet areas within the harvest areas. These zones would be a minimum of approximately 50 feet from the high water mark.
- To protect water quality, all trees within one tree height of SPZs would be felled away from streams. Where a cut tree does fall within a SPZ, the portion of the tree within the SPZ would remain in place.
- No yarding would be permitted in or through any SPZs within the harvest areas.
- To improve water quality, approximately 10 trees (located within the SPZ) downstream of the culvert removal site (Road #9-7-3) would be felled and left in place within the stream channel.

To protect and enhance stand diversity and wildlife habitat components:
Priorities for tree marking would be based on the following:

- Tree selection would be designed to leave a full range of diameter distribution, maintain or increase the proportion of minor species, and retain legacy and wildlife tree structure while meeting target densities. Residual tree densities range from 100 to 140 sq. ft. (square feet) basal area, and approximately 59 to 77 TPA (trees per acre).
- Approximately nine patch cuts would be created within the density management areas by cutting most trees. Five patch cuts would be approximately 1.0 acre in size and four patch cuts would be approximately 0.5 acre in size. Patch cuts would be located in areas of existing conifer understory trees and would not be placed adjacent to property boundaries and stream buffers.
- Within patch cuts, four green TPA would be retained for future downed wood, five green TPA would be retained for future snag creation, and three to four TPA would be retained as live green trees. Trees above average DBHOB (diameter breast height outside bark) and those with wildlife habitat value (dead tops, defect, and forks) would be selected to leave. Leave trees would be scattered or grouped.
- Where patch cuts do not contain existing conifer reproduction, a post harvest assessment would determine if the patch cuts would be planted with a mix of western hemlock and western red cedar or would be allowed to regenerate naturally to conifer forest. If post-treatment monitoring determines that the green leave trees within the patch cuts are providing too much shade they would be cut or topped for snags and/or CWD.
- All open grown trees with significant defect, cavities, or dead or broken tops, and existing snags and CWD would be reserved, except where they pose a safety risk or affect access and operability. Any snags or logs felled or moved for these purposes would remain on site within the project area.
- Additional trees would be reserved around large (greater than 20 inches DBHOB and 40 feet in height) snags to protect them from logging operations and reduce the likelihood of their cutting for worker safety reasons.
- Additional trees would be cut around seedlings and understory trees to increase growing space. The number of additional reserved trees would be approximately equal to the number of additional cut trees, thereby keeping the prescribed trees per acre described in Cold Springs LSR Enhancement Project EA Analysis File (see NEPA file).
- Within the skyline yarding areas, approximately two trees per acre of incidentally felled trees or topped trees (ie. tailtrees, intermediate supports, guyline anchors, hang-ups, etc.) intended to be part of the residual stand would be left on site to function as CWD at the completion of harvest operations.
- Understory conifers less than 7.0 inches DBHOB would be excluded from harvest in Units 3A and 3B. In Unit 3C, understory conifers less than 5.0 inches DBHOB would be excluded from harvest.
- A portion of western hemlock infested with mistletoe in the mid or upper crown and bole would be retained to provide enhanced tree structural habitat, but some infested trees may be removed as necessary to meet the density target.
- Clumps would be retained through variable density thinning and would not exceed 0.1 acre in size. However, several areas would remain untreated due to logging infeasibility and riparian buffers.
- Any plus trees (trees selected for genetic traits) and their reference trees, and bearing trees would be reserved from harvest.

- Any Continuous Vegetation Survey (CVS) plot reference trees would be reserved from harvest to aid in plot relocation for future plot measurements.
- Any tree found to have a stick or ball nest, regardless of size (tree or nest) would be protected.
- Except in yarding corridors/skid trails and gaps, species diversity would be maintained by reserving all trees (merchantable and non merchantable) other than Douglas-fir and western hemlock.

To reduce fire hazard risk and protect air quality:

- Whenever possible, alternative waste recycling of slash material would be encouraged. This may be accomplished by: providing firewood to the public, chipping for co-gen power production, chipping for soil amendments, soil protection, etc.
- Fuel treatment strategies would include directional falling (to keep slash away from fuel breaks), followed by a reduction of surface fuels to reduce the intensity and severity of potential wildfires in the long-term. Fuels reduction may be accomplished by burning of slash piles, by machine processing of slash on-site, or by a combination of these techniques.
- Light accumulations of debris cleared during road construction, reconstruction and along roads that would remain in drivable condition following the completion of the project would be scattered along the length of rights-of-way.
- Large accumulations of debris on or within 30 feet of the edge of landings; constructed, reconstructed and existing roads would be machine or hand piled. Logs, tops, and debris would be decked or piled as directed by the contract administrator (except for logs sold and removed from the project area).
- Debris accumulations within the patch cuts would be machine and/or hand piled and/or chipped. For all areas to be piled or chipped, at least 75 percent of the slash in the ¼ inch to 6 inch diameter range would be piled for burning or chipped with the chips being spread out on the site or removed from the site.
- For areas that are to be machine piled or chipped, mechanical equipment would remain on slopes averaging 35 percent or less (unless the equipment is specifically designed to operate on steeper slopes and approved by the contract administrator).
- All piles would be located at least ten feet away from reserve trees and snags. Larger piles would be preferable over small piles. Windrows would be avoided unless approved by the contract administrator.
- The areas would be monitored for the need of closing or restricting access during periods of high fire danger. During the closed fire season the first year following harvest activities, while fuels are in the "red needle" stage, the areas may be posted and closed to all off road motor vehicle use.
- During the late summer before the onset of fall rains, all machine and hand piles to be burned would be covered at least 80 percent with 4 mil black polyethylene plastic.
- All burning would occur under favorable smoke dispersal conditions in the fall, in compliance with the Oregon State Smoke Management Plan (RMP pp. 22, 65).

To Protect Threatened and Endangered and Bureau Special Status Plants, Animals and Fisheries:

- Site management of any federal or Oregon state Threatened and Endangered (T&E) or Bureau special status (SS) botanical and fungal species found as a result of additional inventories would be accomplished in accordance with, BLM Manual 6840- *Special Status Species Management* and the *Record of Decision To Remove the Survey and Manage*

*Mitigation Measure Standards and Guidelines from Forest Service Land and Resource Management Plans Within the Range of the Northern Spotted Owl (*July, 2007*)*.

- The resource area biologist or botanist would be notified if any T&E and Bureau SS Plants and Animal species are found occupying stands proposed for treatment during project activities. All of the discovered sites would be withdrawn from any timber harvesting activity.
- For the south half of Unit 3A (which drains towards the Luckiamute River), avoid landings within 200 feet of streams as affected streams are within ½ mile of listed fish habitat. For remaining project areas avoid landings within 100 feet of any streams.
- Avoid construction of new roads within 200 feet of any stream channel.
- All fuels treatments utilizing hydraulic loader equipment and/or hand piling methods would be located at least 50 feet from any stream channel.

To Protect Cultural Resources:
The project area occurs in the Coast Range. Survey techniques are based on those described in Appendix D of the *Protocol for Managing Cultural Resource on Lands Administered by the Bureau of Land Management in Oregon*. Post-project survey would be conducted according to standards based on slope defined in the Protocol appendix. Ground disturbing work would be suspended if cultural material is discovered during project work until an archaeologist can assess the significance of the discovery.

Table 2: Summary Comparison of Project Activities for Alternatives 1 and 2

Activity	Alternative 1 (No Action)	Alternative 2 (Proposed Action)
Density management harvest (acres)	0	175
Ground based yarding (acres)	0	53
Skyline yarding (acres)	0	113
Special Yarding (acres)		9
Road construction (feet)	0	4,600
Road renovation (miles)	0	3
Road renovation (culverts to be installed/replaced/removed)	0	6/1/1
Road reconstruction (feet)	0	1,500
CWD creation (acres)	0	7

2.3 COMPARISON OF ALTERNATIVES WITH REGARD TO PURPOSE AND NEED

Table 3: Comparison of Alternatives by Purpose and Need

Purpose and Need (EA Section 1.6)	Alternative 1 (No Action)	Alternative 2 (Proposed Action)
Development of late-successional forest habitat (clumps, CWD, gaps), snag creation.	Does not meet this purpose and need. Creates high level of small size CWD for the next decade or two in all stands within the project areas.	Creates patch openings with adjacent clumps of trees. Increases the quality and value of wildlife habitat by creating immediate hard snags and CWD.
Offer a marketable timber management sale.	Does not meet this purpose and need. Would not offer timber for sale.	Offers approximately 4,412 MBF of timber for sale.
Increase structural diversity in relatively uniform conifer stands.	Does not meet purpose and need. Maintains a highly dense, uniform, small diameter stand of trees with receding crown ratios, loss of limbs and loss of growth. Understory regeneration, shrubs etc. would be lacking.	Reduces tree densities within stands to increase diameter growth and more open stand conditions to preserve limbs and high crown ratios. Increases species diversity and understory regeneration, shrubs, forbs etc.
Provide appropriate access for timber harvest and silvicultural practices used to meet the objectives above, while minimizing increases in road densities.	No change. Maintain existing road densities.	Constructs 4,600 feet of new roads and reconstructs 1,500 feet. Following harvest, the new construction and reconstruction would be decommissioned.
Reduce environmental effects associated with existing roads within the project areas.	No change. Maintain existing drainage and road surface conditions. Delay maintenance on feeder roads, main routes would be maintained.	Renovates existing roads (includes drainage structure installation/replacement/removal on approximately seven cross drains and one stream crossing). These renovations would improve drainage and road surface conditions, resulting in less road surface erosion into streams.
Manage developing forest stands and wildlife habitat in the LSR LUA to develop, accelerate and enhance late-successional forest conditions.	Does not meet purpose and need. Maintains existing forest conditions which are lacking CWD and snags, particularly in decay class 1 and 2.	Increases snags and CWD; providing habitat for amphibians, small mammals, invertebrates, bryophytes and fungi.

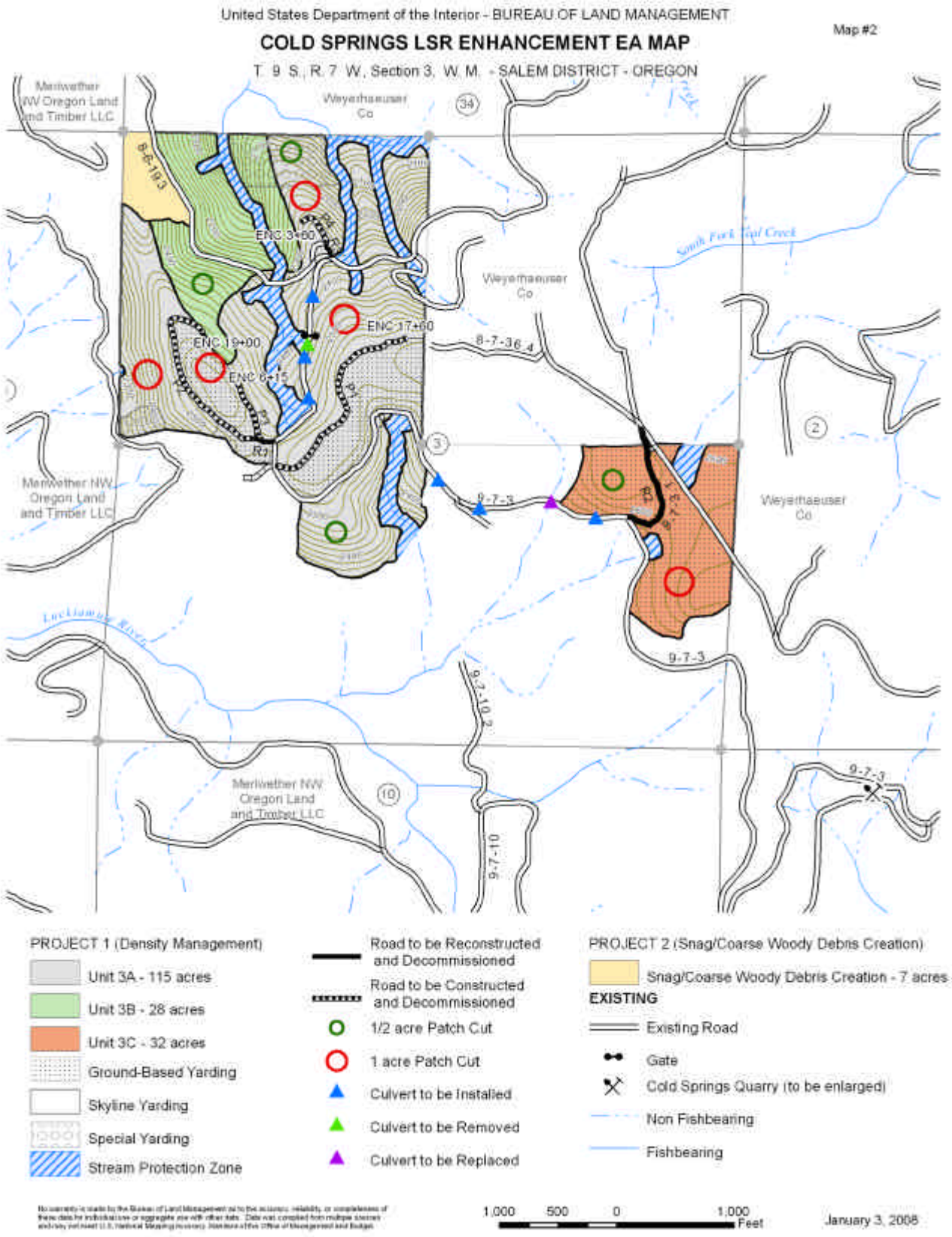
2.4 Alternatives Considered but not Analyzed in Detail

Inclusion of additional density management area and road construction (Option 2): An alternative that would have required an additional 1,000 feet of road construction to access approximately seven acres of density management area (Project 2 area) was considered. The cost of the new road compared to the relatively small benefit of the density management was determined to be unfavorable. Subsequently, this alternative was not analyzed.

Inclusion of additional density management area, road improvement and road construction (Option 3): An alternative that would have required an additional 300 feet of new road construction and ½ mile of road improvement (additional rock placement) of Forest Capital Partners LLC controlled roads to access approximately seven acres of density management area (Project 2 area) was considered. The cost of the road improvement (additional rock placement) to private forest landowner roads was determined to not to be in the best interest of the U.S. Government. In addition, the cost of the new road construction compared to the relatively small benefit of the density management was determined to be unfavorable. Subsequently, this alternative was not analyzed.

Reduction in road construction and density management area and inclusion of additional road improvement (Option 4): An alternative that would have reduced new road construction (Road P1) by 800 feet, required an additional 7,000 feet of road improvement of Weyerhauser Company controlled roads (Rd #'s 8-7-36.4, 9-7-3.1 and 9-7-3) and reduced the density management treatment area by 10 acres was considered. The cost of the road improvement to private forest landowner roads was determined to not be in the best interest of the U.S. Government. Subsequently, this alternative was not analyzed.

Map 2: Map of the Action Alternative



3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL EFFECTS - COMMON TO BOTH PROJECT AREAS

3.1 Identification of Affected Elements of the Environment

The interdisciplinary team reviewed the elements of the human environment, required by law, regulation, Executive Order and policy, to determine if they would be affected by the proposed action. Table 4 ("Critical Elements of the Human Environment") and Table 5 (Other Elements of the Environment) summarize the results of that review. Affected elements are **bold**. All entries apply to the action alternatives, unless otherwise noted.

Table 4: Review of "Critical Elements of the Human Environment" (BLM H-1790-1, Appendix 5) for both projects

"Critical Elements Of The Human Environment"	Status: (i.e., Not Present , Not Affected, or Affected)	Does this project contribute to cumulative effects? Yes/No	Remarks
Air Quality (Clean Air Act)	**Affected**	**Addressed in text (EA section 3.2.6)**	**Addressed in text (EA section 3.2.6 and Cold Springs Timber Sale Proposal Fuels Report pp. 1 to 4).**
Areas of Critical Environmental Concern	Not Present	No	
Cultural Resources	Not Affected	No	Cultural resource sites in the Coast Range, both historic and prehistoric, occur rarely. The probability of site occurrence is low because the majority of BLM-managed Oregon Coast Range land is located on steep upland mountainous terrain that lack concentrated resources humans would use. Post-disturbance inventory would be completed on slopes less than 10 percent.
Energy (Executive Order 13212)	Not Affected	No	There is no known energy resources located in the project areas. The proposed action would have no effect on energy development, production, supply and/or distribution.
Environmental Justice (Executive Order 12898)	Not Affected	No	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	No	
Flood Plains (Executive Order 11988)	Not Affected	No	The proposed action does not involve occupancy or modification of floodplains, and would not increase the risk of flood loss.
Hazardous or Solid Wastes	Not Present	No	

"Critical Elements Of The Human Environment"		Status: (i.e., Not Present , Not Affected, or Affected)	Does this project contribute to cumulative effects? Yes/No	Remarks
Invasive, Nonnative Species (plants) (Executive Order 13112)		**Affected**	**Addressed in text (EA section 3.2.1)**	**Addressed in text (EA section 3.2.1 and Botanical Report Cold Springs Late Successional Reserve Enhancement pp. 1 to 9).**
Native American Religious Concerns		Not Affected	No	No Native American religious concerns were identified during the public scoping period.
Threatened or Endangered (T/E) Species or Habitat	**Fish**	**Affected**	**Addressed in text (EA section 3.2.5)**	**Addressed in text (EA section 3.2.5 and Cold Springs Density Management Project Environmental Assessment Fisheries Abstract pp. 1 to 7).**
	Plant	Not Present	No	
	Wildlife (including designated Critical Habitat)	**Affected**	**Addressed in text (EA section 3.2.2)**	**Addressed in text (EA section 3.2.2 and Biological Evaluation pp. 1 to 9).**
Water Quality (Surface and Ground)		**Affected**	**Addressed in text (EA section 3.2.4)**	**Addressed in text (EA section 3.2.4, Hydrology/Soils Specialist Report Abstracts Cold Springs Timber Sale pp. 1 to 9).**
Wetlands/Riparian Zones (Executive Order 11990)		Not Affected	No	Wetlands and Riparian zones (i.e., near stream areas with actual riparian vegetation or characteristics) would be designated as SPZ's and buffered out of the treatment areas. (Cold Springs LSR Enhancement Project Silvicultural Prescription: Including Upland and Riparian Reserves in NEPA file).
Wild and Scenic Rivers		Not Present	No	
Wilderness		Not Present	No	

Table 5: Review of Other Elements of the Environment

Other Elements of the Environment		Status: (i.e., Not Present , Not Affected, or Affected)	Does this project contribute to cumulative effects? Yes/No	Remarks
Fire Hazard/Risk		**Affected**	**Addressed in text (EA section 3.2.6)**	**Addressed in text (EA section 3.2.6 and Cold Springs Timber Sale Proposal Fuels Report pp. 1 to 4).**
Other Fish Species with Bureau Status and Essential Fish Habitat		**Affected**	**Addressed in text (EA section 3.2.5)**	**Addressed in text (EA section 3.2.5 and Cold Springs Density Management Project Environmental Assessment Fisheries Abstract pp. 1 to 7)**
Land Uses (right-of-ways, permits, etc)		Not Affected	No	Agreements are in place and would not be changed by the proposed project.
Late Successional and Old Growth Habitat		Not Present	No	
Mineral Resources		Not Present	No	
Recreation		Not Affected	No	Dispersed use by recreationist (predominately hunting). The areas are isolated.
Rural Interface Areas		Not Present	No	
Soils		**Affected**	**Addressed in text (EA section 3.2.3)**	**Addressed in text (EA section 3.2.3, Hydrology/Soils Specialist Report Abstracts Cold Springs Timber Sale pp. 1 to 9).**
Special Areas outside ACECs (Within or Adjacent) (RMP pp. 33-35)		Not Present	No	
Other Special status Species / Habitat	Plants	Not Affected	No	There are no known sites of any SS botanical or fungal species known from within the project areas.
	Wildlife	**Affected**	**Addressed in text (EA section 3.2.2)**	**Addressed in text (EA section 3.2.2 and Biological Evaluation pp. 1 to 9).**
Visual Resources		Not Affected	No	Project is located within VRM Class III and IV land. Changes to the landscape character are expected to be low and comply with Class III and IV guidelines.
Water Resources – Other (303d listed streams, DEQ 319 assessment, Downstream Beneficial Uses; water quantity, Key watershed, Municipal and Domestic)		**Affected**	**Addressed in text (EA section 3.2.4)**	**Addressed in text (EA section 3.2.4, Hydrology/Soils Specialist Report Abstracts Cold Springs Timber Sale pp. 1 to 9).**

Other Elements of the Environment	Status: (i.e., Not Present , Not Affected, or Affected)	Does this project contribute to cumulative effects? Yes/No	Remarks
Wildlife Structural or Habitat Components - Other (Snags/CWD/ Special Habitats, road densities)	**Affected**	**Addressed in text (EA section 3.2.2)**	**Addressed in text (EA section 3.2.2 and Biological Evaluation pp. 1 to 9).**

3.2 Affected Environment and Environmental Effects

Those elements of the human environment that were determined to be affected are *vegetation, wildlife, soils, water, fisheries/aquatic habitat, and fuels/air quality.* This section describes the current condition and trend of those affected elements, and the environmental effects of the alternatives on those elements.

3.2.1 Vegetation

(IDT Reports incorporated by reference: Forest Vegetation and Silviculture Specialist Report Abstract, Cold Springs Project pp. 1 to 11, and Cold Springs Botanical Report pp.1 to 9)

Affected Environment

Density Management Treatment (Project 1)

Present Stand Condition and History

The stands range from 45 to 55 years old, and are a mix of Douglas fir and western hemlock, with a minor component of western red cedar. They all originated with natural regeneration in the late early 1950s after clearcut or seed tree harvest. Regeneration appears to have continued over time, resulting in in-growth of younger western hemlock in a few areas of the stands. There has been no past management of the current stands. Understory density is highly variable (absent over much of the stand areas, but does occur in scattered patches), ranging from 0 to 58 saplings per acre, (mostly consisting of western hemlock). Approximately 64 acres of proposed density management occur in the LSR LUA and about 111 acres occurs in RR LUA.

These stands are currently in the stem exclusion stage of development (Oliver and Larson, 1996). Inter-tree competition can be described by the concept of relative density where competition is strong and tree growth and vigor declines. Under such competition, crowns recede from below due to shading, and stems become taller and slender as height growth continues but diameter growth slows in response to the loss of crown. Trees become less mechanically stable, and more susceptible to pests. Death occurs from suppression, insects and diseases, or from buckling where tree stems become very tall and thin (Oliver and Larson 1996).

The tall shrub and understory species that are common in the project area include: western hemlock seedlings and saplings, red huckleberry, and vine maple. Salal and Oregon grape are dominant low shrubs, and Oregon oxalis and sword-fern are the dominant forbs that occur within the project area.

Riparian areas are mostly dominated by conifers with scattered red alder, Devil's club, stink current, golden-carpet and skunk cabbage. Skunk cabbage and golden-carpet are mostly restricted to riparian areas with gentle slopes.

Located in the NE corner of Unit 3C, a small portion (approximately 15 square feet) of the aquatic system is dominated by Sphagnum. This small area is surrounded by thickets of salal and Scouler's willow. Other than the Sphagnum dominated portion of one riparian area, there are no unique habitat areas (caves, cliffs, meadows, waterfalls, ponds, lakes) within the proposed project area.

The habitat conditions within the RR LUA, (outside the SPZs) are essentially identical to habitat conditions within the uplands.

Coarse Woody Debris

Coarse woody debris is an important component of the late-successional forest structure desired for the treatment area. It includes downed wood, snags, and live trees with dead or broken tops or decay. The down wood biomass in the proposed treatment area has a weighted average of 1103 cubic feet per acre, and snags 669 cubic feet per acre, for a total of 1772 cubic feet per acre. Overall, approximately 62 percent of the total CWD volume is from down wood, and 38 percent is from snags. Of that total, about 41 percent is in decay classes 1 and 2 (see Figure 1), resulting from recent tree mortality, windthrow or *Phellinus weirii* root rot infection. There is a weighted average of 59 conifer snags per acre in the project area, with an overall weighted average DBHOB of 12.5 inches. Nearly all of these are small trees that have died as a result of suppression from overtopping trees, known as density mortality. Snags greater than 24 inches DBHOB have value for the greatest amount of wildlife species; there is a weighted average of only 1.2 of these larger snags per acre.

Unit 3C contains very little CWD (no downed wood was measured in the unit), and snags are abundant but very small.

Using guidelines from the Late Successional Reserve Assessment for Oregon's Northern Coast Range Adaptive Management Area (Page 96), Units 3A and 3B meet moderate levels of CWD recommended (greater than 1100 cubic feet per acre) for early or mid seral stands. Unit 3C is below the minimum guideline for early seral (greater than 525 cubic feet per acre). However, due to the small size of the trees in Unit 3C, there is little opportunity to create CWD of a size that would provide useful habitat or persist long on the site.

Forest Health

Disease

There are no known current threats to forest health beyond the following endemic processes in the proposed project area. Western hemlock dwarf mistletoe infects a weighted average of six western hemlock trees per acre overall in the stands. Laminated root rot affects less than five percent of the area, creating small (0.1 to 0.25 acre) openings in stands.

Insects

Down Douglas-fir trees encourage the build-up of Douglas-fir beetle populations, which subsequently attack and kill standing Douglas-fir trees. Douglas-fir trees weakened by root disease infection are more likely to be attacked by the Douglas-fir beetle (Hadfield 1986). Scattered windthrow in the winter of 2006/2007 in the project area shows current beetle activity. The risk of windthrow from severe winter storms always exists, and the upper lee slopes of major southeast- to northwest-running

ridges generally experience the highest degree of windthrow in the Oregon Coast Range (Ruth and Yoder 1953)

Snag/CWD Creation (Project 2)

Present Stand Condition and History

The proposed treatment area consists of approximately seven acres of forest. The stand is approximately 75 years old, and is dominated by western hemlock, with a minor component of Douglas-fir and western red cedar. It originated with natural regeneration in the late early 1930s after clearcut or seed tree harvest. Regeneration appears to have continued over time, resulting in ingrowth of younger western hemlock in areas of the stand. There has been no past management. Understory density is variable – it occurs in scattered patches, averaging 160 saplings per acre, mostly of western hemlock. Understory vegetation is limited by overstory density and ranges from sparse to moderately abundant. Current stand attributes are found in Table 6.

Coarse Woody Debris

The down wood in the proposed treatment area averages 3651 cubic feet per acre, and snags 1095 cubic feet per acre, for a total of 4746 cubic feet per acre. Approximately 77 percent of the total coarse wood volume is from down wood, and 23 percent is from snags. Of that total, about 33 percent is in the 'hard' decay classes (class 1 and 2), resulting from recent tree mortality and windthrow or *Phellinus weirii* root rot infection. There is an average of 63 conifer snags per acre, with an average DBHOB of 10.9 inches. Nearly all of these are small trees that have died as a result of suppression from overtopping trees, known as density mortality. Snags greater than 24 inches DBHOB have value for the greatest amount of wildlife species; there is an average of only .6 of these larger snags per acre. The stand has unusually abundant live broken-topped trees (14.1 per acre), that form an important component of CWD. It also has larger diameter trees relative to other stands in the immediate vicinity (ranging up to 30 inches DBHOB), which provide excellent potential for creation of larger-diameter coarse woody debris. See Table 9 for CWD summary information.

Using guidelines from the Late Successional Reserve Assessment for Oregon's Northern Coast Range Adaptive Management Area, Page 96, the stand meets high levels of CWD recommended (1980-4840 cubic feet per acre) for mid seral stands.

Forest Health

Forest health conditions are as described for Project 1, however the project area contains relatively high rates of infection of western hemlock dwarf mistletoe (*Arceuthobium tsugense*), at 28 trees per acre. The stand is dominated by the host species, western hemlock, and is 25 years older than adjacent stands in Project 1, so infections have had more years to spread

Table 6. Current stand attributes for stands in Cold Springs LSR Enhancement Projects (trees greater than 5" DBHOB)

Unit	STAND DATA						
3A							
Species	***Acres***	***Total age***	***Trees/ac***	***Basal area/ac[1]***	***DBHOB (in.)[2]***	***RDI[3]***	***Crown closure[4]***
Douglas-fir			313	284	12.9		
Western Hemlock			30	41	15.9		
Western red cedar			1	4	27.2		
Total	**106**	**49**	**344**	**332**	**13.2**	**0.80**	**79%**
Snag\CWD Creation (Project 2)							
Douglas-fir			30	40	15.7		
Western Hemlock			157	195	15.1		
Western red cedar			43	45	13.9		
Total	**12**	**75**	**238**	**289**	**14.9**	**.62**	**75%**
3B							
Douglas-fir			50	87	17.9		
Western Hemlock			140	182	15.4		
Unknown			4	28	35.2		
Total	**26**	**55**	**194**	**297**	**16.7**	**0.62**	**73%**
3C							
Douglas-fir			391	213	10.0		
Western Hemlock			150	80	9.9		
Unknown			2.5	4.8	18.7		
Total	**38**	**45**	**544**	**298**	**10.0**	**0.88**	**78%**

[1] Basal area in square feet: cross-sectional area occupied by tree boles on each acre, a measure of density
[2] Average diameter at breast height (4.5 feet).
[3] Relative Density Index, the density of trees per acre relative to the maximum density possible (Reineke, 1933).
[4] Crown closure estimate from stand exam contractor.

Density Management Treatment (Project 1) and Snag/CWD Creation (Project 2)

Federal and Oregon State Threatened/Endangered, Bureau Special Status and Special Attention Botanical and Fungal Species:
Inventory of the project area for federal and Oregon State threatened and endangered and Bureau SS vascular plant, lichen, bryophyte and fungal species were accomplished through intuitive controlled surveys, in accordance with survey protocols for the specific groups of species.

There are no known sites of any T&E or Bureau SS vascular plant, lichen, bryophyte, or fungi species within the project area nor were any found during subsequent surveys.

Invasive (Noxious Weeds, Invasive Non-native Species):
The following noxious weeds are known from within or adjacent the project area, Tansy ragwort, bull and Canadian thistles, St. John's wort, and Scot's broom.

Environmental Effects

3.2.1.1 Alternative 1 (No Action Alternative)

Density Management Treatment (Project 1

Natural disturbance agents such as disease, insects and wind would create stand structural diversity. The timing and intensity of these conditions are unknown, but it is expected that diversity would take considerably longer to develop than if the proposed treatment were implemented.

Stand structural conditions would remain on the current trajectory of high and increasing density. Understory development would be limited, few new understory trees would establish, and existing understory trees would die or slow in growth due to increasing competition. Stand structure would remain uniform.

Disturbance events and endemic levels of insects and disease would not be expected to result in accelerated development with any degree of certainty. The main input of CWD would come from such events and from density mortality. Without treatment, density mortality would continue and increase. Inputs from laminated root rot and windthrow would continue, and events may result in more numerous snags or downed logs due to higher stand density. In general, the quantity of trees dying is expected to be much greater than if the stands were thinned, but dead trees would be smaller in size. One study of stands aged 14 to 38 years, over 22 years showed total annual stem mortality of one to five percent.

As the canopy closes and lower limbs are lost to shading, crown ratios would decrease from the current average of 41 percent to 30 percent in 30 years. Wind firmness and individual tree stability would also decrease.

There would be no reduction in canopy density and consequently no microclimatic changes in the Riparian Reserves. This alternative does not meet the objectives for speeding development of late-successional forest habitat.

The number and diversity of understory and shrubs/forbs species in many areas may remain low.

As openings in the canopy are created (blowdown, dying trees from pathogens and insects) additional sunlight would penetrate the currently closed canopy allowing an increase in direct sunlight to the ground. Additional openings may allow for an increase in the number and diversity of botanical and fungal species in the area. Open slash covered areas may become dominated by shrubs (salal, Oregon grape) and/or ferns.

Because the sphagnum riparian area has no direct canopy cover, salal is threatening to take over the small area dominated by sphagnum. In time, the sphagnum component of this stream may be lost due to natural succession.

Threatened/Endangered and Special Status Botanical and Fungal Species:
Not affected, since no known sites exist within the project area.

Noxious Weeds:
Without any new human caused disturbances in the proposed project area the established noxious weed populations would remain at the current level.

Snag/CWD Creation (Project 2)

Coarse wood inputs from density mortality and natural disturbance will continue, but it will be smaller in size. Density mortality will be abundant, because the stand is at high density (Table 6) and suppressed trees will continue to die. However, these would be the smallest trees in the stand, generally below the average DBH of 14.9 inches. Inputs from wind and other disturbance will continue and may contribute larger diameter material.

3.2.1.2 Alternative 2 (Proposed Action):

Density Management Treatment (Project 1)

Stand Development
Variable density thinning to the recommended densities is expected to put the stands on a trajectory toward development of some late seral forest conditions and yield an estimated total of 4,412 thousand board feet over the 175 acre treatment area. Stand development for 30 years after density management under the proposed action is compared to stand development under no action in Table 7.

On the average, the recommended levels of thinning would increase both understory and overstory tree diameter growth, increase crown length, width, and branch size, promote stand stability (indicated by the height:diameter ratio), and result in a greater level of understory development than would occur without thinning.

In portions of the treatment area where western hemlock is the dominant species, it would be thinned. On average, species diversity would be increased, as thinning would target Douglas-fir, increasing the relative proportion of the other tree species. The current weighted average species composition of all stands combined is 80 percent Douglas-fir, 18 percent western hemlock and 2 percent western red cedar. After treatment, the weighted average would be approximately 63 percent Douglas-fir, 32 percent western hemlock, and 5 percent western red cedar.

Trees with less competition maintain deeper live crowns, lower their center of gravity and decrease their height/diameter ratios, (reducing susceptibility to wind damage). Deep live crowns are also a structural attribute of late seral forest. With treatment tree stability would improve over time. Density management would result in an additional 1.2 inch of diameter growth in 30 years; a 24 percent increase from no treatment.

The more open conditions resulting from thinning and gap creation would cause ground level microclimatic changes such as increased maximum temperatures, lower minimum humidity, and increased wind speed. These effects adjacent to streams would be reduced by SPZs. Future tree growth would result in recovery of canopy, by as much as 4-6 percent canopy cover annually. Understory establishment and growth would contribute to canopy cover as well.

Treatment would also include creation of 0.5 and 1.0 acre gaps, and retention of small clumps. This would increase spatial and structural diversity of the stand. Some trees would experience no competition and grow very full crowns. Some trees would remain at close spacing and retain closed

canopy conditions. Gaps would allow development of high quality early seral habitat that includes a vigorous shrub layer, CWD, and residual overstory trees.

Potential future treatments to create CWD and snags would increase the number of snags and CWD volumes. Inputs would be of large diameter, created from average size of residual stand, and of decay class 1 material. Inputs resulting from harvest would consist of limbs and tops, breakage and cull material, and incidentally felled or topped trees that would be left on site. The harvest input would likely result in a gain of 200 cubic feet per acre of CWD in skyline yarding areas (122 acres of the project area). Measures to protect existing large snags would likely be effective, but many of the smaller snags would likely be felled for safety reasons.

Skyline and ground based yarding systems would result in minor damage to a small percentage of the residual trees. Damage may result in greater incidence of stem decays in the future, adding to late-successional structure and function. Burning of slash piles along roads and on landings could result in damage to the crowns of a few adjacent residual trees.

Table 7. Stand Characteristics with **Treatment vs. No Treatment** 30 years in the future (year 2035)[1]

Unit	Treatment	Age[1] (yrs)	TPA[2]	BA[3] (sq. ft.)	QMD[4] (in)	RDI[5]	CR[6]	Density Mortality		
								TPA[7]	BA (sq. ft.)	QMD (in)
3A	120 BA	79	64	219	25.0	0.54	0.46	0.01	0.02	19.1
	No Tmt.	79	185	366	19.0	1.00	0.33	44.3	30.6	11.3
3B	140 BA	85	59	224	26.4	0.40	0.38	0.00	0.00	0.0
	No Tmt.	85	158	351	20.2	0.70	0.27	4.89	2.50	9.7
3C	100 BA	75	77	207	22.2	0.53	0.39	0.12	0.17	16.1
	No Tmt.	75	246	343	16.0	1.01	0.30	280.00	69.00	6.7
Average	**Treatment**	**80**	**67**	**217**	**24.5**	**0.49**	**0.41**	**0.04**	**0.06**	**11.8**
	No Tmt.	**80**	**196**	**353**	**18.4**	**0.90**	**0.30**	**110**	**34.03**	**9.22**

[1]Modeled from stand age in 2005 to 2035.
[2]Trees per acre greater than 5 inches DBHOB.
[3]Basal Area (BA) as measured in square feet is defined as total cross-sectional area of trees in a stand.
[4]QMD=quadratic mean diameter, the DBHOB of tree of mean basal area.
[5]Relative Density (RD) is a ratio of trees in a given stand compared with the number of trees a site can support.
[6]Crown ratio is the amount of live crown in relation to total tree height.
[7]All Trees per acre (includes saplings).

Table 8. Average pre-treatment and post-treatment stand characteristics immediately after thinning stands in the Cold Springs LSR Enhancement Project (trees greater than 7 inches DBHOB only).

Unit	Age[1] (yrs)	Pre-treatment stand characteristics					Post-treatment stand characteristics immediately after thinning				
		TPA[2]	BA[3] (sq. ft.)	DBHOB (in)[4]	RDI[5]	CR[6]	TPA[2]	BA[3] (sq. ft.)	DBHOB (in)[4]	RDI[5]	CR[6]
3A	49	282	300	14.0	.80	.41	65	123	18.6	.34	.60
3B	55	167	251	16.6	.62	.45	59	140	20.9	.27	.51
3C	45	560	281	9.6	.88	.38	77	100	15.4	.30	.53
Avg.	**50**	**336**	**277**	**13.4**	**.77**	**.41**	**67**	**121**	**18.3**	**.30**	**.55**

[1]Total stand age - 2005 data.
[2]Number of trees per acre.
[3]Basal area per acre.
[4]Quadratic mean diameter, diameter at breast height (4.5 feet) of tree of average basal area.
[5]Proportion of maximum Stand Density Index (Reineke 1933), as a ratio of trees in a given stand compared with the biological maximum number of trees a site can support. Calculated on trees greater than 5 inches DBHOB.
[6] Crown ratio is the amount of live crown in relation to total tree height. Greater crown ratio generally indicates greater tree health and vigor. (Average crown ratio is much less than those of dominant trees.)

Desirable habitat for aquatic and riparian dependant species within the treated RR LUA would be enhanced by

- ✓ maintenance of stand health and stability,
- ✓ long term increase in quality LWD (large woody debris) recruitment, and
- ✓ maintenance of stream temperature through shading.

Habitat to support well-distributed riparian-dependent and riparian associated species would be maintained by the density management. Treatment would result in characteristics such as large diameter trees with deep, wide crowns and large limbs, understory development, and large diameter snags and CWD. Such a habitat would support diverse populations of plants, invertebrates, and vertebrates.

The decrease in the canopy cover would allow an increased amount of sunlight to reach the forest floor. The increase in sunlight would allow seedlings, saplings, shrubs, and forbs to increase in size and density. Many open Oregon beak moss dominated or slash covered areas could become dominated by shrub, forb, or other bryophyte species. Essentially the removal of some of the conifer canopy in the project area would result in an increase in botanical diversity and an increase in the density of existing shrubs and forbs.

The stems of the severed conifers would be removed from site. The tops, branches and broken/shattered stems would remain on site to decay. Some of the broken stems and larger diameter tops would provide short-term habitat for the Douglas-fir bark beetle. There would be no short-term elevated risk of bark beetle infestation resulting from harvest and CWD creation; but risk of significant windthrow that could trigger bark beetle infestation would exist. In the unlikely event of a large infestation of these beetles, some reserved Douglas-fir trees may be killed in the following one to five years. Subsequent infestations are not likely after approximately five years.

Blown-down timber may also occur post harvest in the thinned areas creating additional down woody debris. The potential for windthrow from winter storms would be higher for the first decade following density management. The greatest risk of windthrow after density management would be to trees with

the poorest height:diameter ratios. Risk is also greater near created openings (patch openings, and clearcuts on adjacent private lands), and where aspect (the lee side of ridges from prevailing winds) and topography increase risk. Windthrow is not expected to reduce tree stocking by more than 20 percent for the first decade after treatment over the treated area (Busby, Adler, Warren and Swanson, 2006).

All existing vegetation in the forested areas where roads are to be constructed, reconstructed or renovated would be scraped to mineral soil. These areas would be heavily compacted through the road building and logging operations. Timber falling and yarding operations would also disrupt areas of duff and expose mineral soil, especially in skyline yarding corridors and ground based skid trails.

The unique sphagnum riparian area would be protected to the same degree as the no action alternative and is included within a SPZ.

Federal and Oregon State Threatened/Endangered, Bureau Special Status and Special Attention Botanical and Fungal Species:
This project would not directly affect any T and E or bureau SS vascular plant, lichen, bryophyte, or fungi species since there are no known sites within the project area or adjacent to the project. However, this action could provide positive effects for these species. Thinning dense conifer stands could provide habitat for T and E or bureau SS botanical and fungal species known from forests with larger diameter trees at an earlier age since thinning dense stands can provide an increase in secondary conifer growth and allow for an increase in diversity and density of the existing shrub and forb species.

This project could adversely affect any species that are not practical to survey for and known sites that were not located during subsequent surveys. These species would mainly include bureau SS hypogeous fungi species. However, the majority of these species have no known sites within the Marys Peak Resource Area or the Northern Oregon Coast Range Mountains.

Invasive (Noxious Weeds, Invasive Non-native Species):
Exposed mineral soil often creates environments favorable for the establishment of non-native plant species. All road construction/renovation/reconstruction areas, landing areas, ground based skid roads and skyline yarding corridors pose the greatest risk of exposing mineral soil with the implementation of this project. Non-native species may become established in any exposed mineral soil areas. These non-native species often persist for several years but soon decline as native vegetation increases in density within the thinned areas.

Any adverse effects from non-native plants infestations within or near the project area are not anticipated. The risk rating for the long-term establishment of noxious weed species and consequences of adverse effects on this project area is low because:

- the implementation of the Marys Peak integrated non-native plant management plan allows for early detection and rapid response of non-native plant species,
- the known noxious weeds in the project area are regionally abundant,
- design features are incorporated to minimize the establishment of noxious weeds,
- in western Oregon, many common and widespread non-native species often persist for several years after timber harvest but soon decline as native vegetation increases within the project areas. In addition, all road construction and road maintenance areas are monitored for noxious weed species and if detected entered into an appropriate Marys

Peak control program. Monitoring newly constructed roads provides for early detection and allow for a rapid response to eradicate any non-native species of concern and

- sowing seed on exposed soil areas tends to abate the establishment of non-native weeds by reducing the amount of habitat (exposed mineral soil) available for infestations.

Snag/CWD Creation (Project 2)

This alternative would kill up to 35 large trees (trees greater than the average stand diameter) and up to 140 small trees (trees less than the average stand diameter) by either girdling, topping or felling. The trees would be left on site to decay. Killing these trees on the seven acres would have the same effects as those discussed in Project 1 in terms of increasing the amount of direct sunlight to the stand and any anticipated beetle infestations.

Though coarse wood levels are already high, this action would further increase the levels of snags and downed wood, creating an area of abundant, relatively large diameter, decay class 1 and 2 material. Relative to stands planned for density management in Project 1, it would provide a habitat component that is lacking or much less abundant in other stands.

The broom structures present from mistletoe infection have habitat value for some wildlife species for nesting, roosting and foraging. Creation of coarse woody debris, in conjunction with mistletoe broom structures, deep crowns of shade tolerant western hemlock and cedar, and existing broken-topped live trees helps to create a diverse and structurally complex stand that contains a variety of wildlife habitat components.

The mortality of target trees would have a small effect on the stand structure, the growth and development of remaining live trees, and on understory vegetation. The stand would be more open in areas, ranging from slight decrease in canopy cover, to creation of small gaps. The effect of that would be to allow greater growth and crown development of remaining trees, and an increase in the density of understory vegetation.

Creation of coarse woody debris at the level proposed would likely trigger bark beetle attack to live standing trees. Three or more windthrown Douglas-fir trees per acre greater than 12 inches in diameter can produce sufficient beetles to cause infestation and mortality of standing live Douglas-fir trees, estimated at approximately 60 percent of the number of infested down trees (Hostetler and Ross 1996). Recent research shows felling of 20 trees per acre in an 88 year old stand in the Coast Range resulted in mortality of only .8 live standing trees per acre (Ross and Hostetler, 2006). Mortality of live trees potentially resulting from CWD creation is estimated at approximately 1.0 tree per acre, but depends on many factors and could range from 0-5.0 trees per acre. Mortality could occur in the Project 2 stand, as well as adjacent area of Project 1 stands but is likely to be limited to an area of less than 10 acres surrounding the treatment area. Additional mortality is very unlikely to reduce tree stocking below desired levels.

There are no unique habitat areas (caves, cliffs, meadows, waterfalls, ponds, lakes) within the proposed project area.

Threatened/Endangered and Special Status Botanical and Fungal Species
The effect on T&E and bureau SS botanical and fungal species would be the same as Project 1. There are no known sites of any T&E or bureau SS species within the project area.

Invasive (Noxious Weeds, Invasive Non-native Species):
This project would only expose mineral soil where trees are felled and the branches or butt portion gouge through the existing slash and vegetation and exposes mineral soil. Any exposed mineral soil would be considered minimal or minuscule. Therefore the risk rating for any adverse effects from the establishment of non-native or noxious species within the project area would be extremely low.

3.2.1.3 Cumulative Effects

The proposed action consists of commercially thinning approximately 175 acres located within the MEGAWA. The MEGAWA encompasses approximately 395,480 acres. Approximately 6.9 percent (27,108 acres) of the MEGAWA is under the jurisdiction of the BLM and this project occurs on less than 0.64 percent of BLM-managed lands. Effects of the proposed action on native vegetation are expected to be localized within the MEGAWA.

Examples of forest management activities and natural events on BLM-managed land within the MEGAWA that would create soil disturbance, increase available light, and increase soil temperatures, all of which would influence the spread of non-native plants (NNPs) are:

- commercial and pre-commercial timber density management projects;
- young stand maintenance;
- road construction, maintenance, renovation, decommissioning, and culvert replacements;
- landslides, high flow sedimentation deposits and;
- off highway vehicle (OHV) activities.

Activities that do not necessarily create disturbance but influence the spread of weed seeds are recreational hiking, biking, horseback riding, fishing and hunting. Other sources of seed dispersal are from wildlife movement, water movement, natural dehiscence and wind. Many past and present management and non-management activities tend to open dense forest settings and disturb soils therefore providing opportunities for widespread NNP infestations to occur. Most NNPs are not shade tolerant. They would not persist in a forest setting as they become out-competed for light as tree and/or shrub canopies close and light to the understory is reduced. The implementation of this project would likely increase the number of common and widespread NNP species that are known to occur within the MEGAWA. However, as discussed above the risk rating for any adverse cumulative effects to the MEGAWA or any adjacent watersheds would remain low.

3.2.2 Wildlife

(IDT Reports incorporated by reference: Biological Evaluation for Terrestrial Wildlife (pp. 1 to 5):

Affected Environment

Density Management Treatment (Project 1) and Snag/CWD Creation (Project 2)

Wildlife Structural or Habitat Components: Special Habitats/Special Habitat components (snags, down logs, remnant old-growth trees):

A broad-scale analysis of federal lands within this part of northern Oregon was presented within the *Late-Successional Reserve Assessment for Oregon's North Coast Range Adaptive Management Area* (referred to as the *LSRA*, see USDA-FS and USDI-BLM 1998). The *LSRA* describes the BLM-managed lands in the project area which form a distinct checker-board linkage between a larger block of federal forest land to the south, and smaller blocks of BLM-managed lands to the north and west.

The *LSRA* considers this landscape to function as an important corridor of mixed seral stages which form a connecting linkage between adjacent blocks of federally managed lands. This is expected to grow into older forest habitat over the next several decades.

The project area straddles the ridgeline that separates three sub-watersheds (6th field watersheds as described in Hydrology report of Analysis File). This landscape was extensively logged in the 1920s through early 1960s. As a result, the structural characteristics of late seral and old-growth forests, such as large snags, abundant down logs, and complex forest canopies are highly fragmented in this landscape. Bureau of Land Management managed-lands within the project area and adjoining sections are a mix of mid seral forest stands interspersed with small patches of late seral and old-growth stands. The intervening parcels of private ownership are dominated by early seral and mid seral forest stands that are currently being managed on short rotations (40 to 60 years).

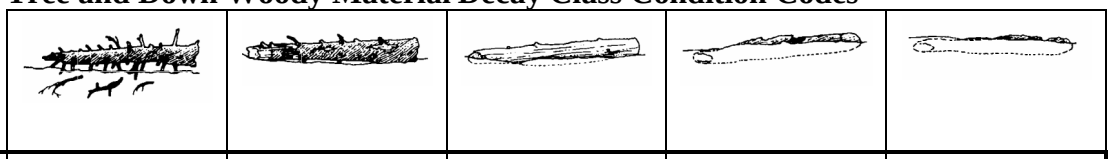
Mid seral conifer forests in this region exhibit a wide range in the density of snags and down logs that are present (Mellen et al. 2006, Rose et al. 2001, USDA-FS and USDI-BLM 1998). The legacy of logging and fire history in this project area has resulted in moderate accumulations of down logs in advanced stages of decay (Figure 1) within most units. Stem exclusion processes and small windthrow events have recently contributed moderate levels of small diameter snags and down logs in the proposed units. The volume of down logs within the project area (Table 9: 1103 cubic feet per acre) falls within the moderate range of what might be expected to occur in natural stands in this seral stage (*LSRA* Table 20, page 80). Overall, snag density is relatively high (Table 9: 59 trees per acre) but is composed primarily of small diameter trees that have died due to suppression mortality. Larger size snags (greater than 24 inches DBHOB) which benefit a greater number of wildlife species, are rather scarce (1.2 snags/acre), which is lower than what might be expected for natural stands in this seral stage within this province (Mellen et al. 2006). None of the proposed project units contain any live old-growth remnant trees.

Table 9. Cold Springs LSR Enhancement CWD (conifer only, downed wood over 8 feet long and 5 inches diameter, snags over 5 inches DBHOB).

Stand Exam Unit	Total age (yrs)	Down wood volume (cu ft/ac)	Down wood volume (%)	Snag Volume (greater than 5 inches DBHOB) (cu ft/ac)	Snag volume (%)	Total volume (cu ft/ac)	Snags per acre	Snag QMD	Broken Topped Live TPA
3A	49	1337	69%	601	31 %	1938	69	9.3	0
3B	55	254	15%	1412	85%	1666	19	21.4	4.6
3C	45	0	0%	286	100%	286	46	8.5	0
Snag\CWD (Project 2)	75	3651	77%	1095	23%	4746	63	10.9	14.1
Average[1]	**67**	**1103**	**62%**	**669**	**38%**	**1772**	**59**	**12.5**	**4.7**

[1]Average weighted by unit acreage.

Figure 1: Down Tree and Down Woody Material Decay Class Condition Codes



Log Decomposition Class	1	2	3	4	5
Bark	Intact	Intact	Trace	Absent	Absent
Twigs	Present	Absent	Absent	Absent	Absent
Texture	Intact	Intact to soft	Hard, large pieces	Soft, blocky pieces	Soft, powdery
Shape	Round	Round	Round	Round to oval	Oval
Color of wood	Original	Original	Original to faded	Light brown to faded brown	Faded to light yellow or gray
Bole portion on ground	None, elevated on supports	Parts touch, still elevated	Bole on ground	Partially below ground	Mostly below ground

The Salem District RMP and the MEGAWA have recognized that special habitat features (caves, cliffs, exposed rock, talus, wetland types, and meadows) add valuable wildlife diversity to the local landscape. Within the proposed treatment units for Project 1 and 2, there are no known special habitat features. Unit 3C in Project 1 has a small sphagnum fen adjacent to it.

Threatened or Endangered Wildlife Species or Habitat

The marbled murrelet and northern spotted owl are two federally threatened wildlife species that are known to occur in the vicinity of this project area.

Marbled Murrelet

The project units are located 25 miles inland from the ocean. The nearest occupied marbled murrelet site is located on BLM-managed lands 5.7 miles southwest of the project area; although, murrelet presence was detected within one mile of unit 3C in 1989. No recent survey efforts exist for the vicinity. The proposed harvest units are not considered suitable habitat and murrelets are not expected to occur within the project units since they do not nest in young forest stands which lack canopy structures for nest platforms (McShane et al. 2004). The BLM-managed lands within this project area have been designated as critical habitat for this species (Unit: OR-03-c), but no constituent elements of critical habitat are present within the proposed treatment units (USDI-FWS 1996).

Northern Spotted Owl

No spotted owl surveys were required for this project evaluation. However, BLM and cooperators have conducted extensive spotted owl surveys in this vicinity since the mid 1980s. There are three active spotted owl sites within three miles of the project units, (the closest site is 2.2 miles to the southeast), placing this project area beyond the expected home range (1.5 miles) for any resident spotted owls. The proposed treatment units do not provide suitable habitat for spotted owls, but they might function as dispersal habitat since they do provide sub-canopy flying space for owls; that may be dispersing across the landscape. The project area falls within a critical habitat unit (CHU: OR-45) that has been designated for spotted owls. There are 6,965 acres of federal lands within CHU OR-45, and about 4,765 acres (68 percent) currently provide dispersal habitat for spotted owls. Dispersal habitat is considered a constituent element of spotted owl critical habitat (USDI-FWS 1992). The project area

lies within a Reserved Pair Area (RPA) that has been designated by the NWFP for protection and restoration of habitat for resident spotted owls (USDA-FS and USDI-BLM 2000).

Other Special Status Wildlife Species
A great variety of wildlife species may utilize mid seral habitats that are part of the proposed action area (O'Neil et al. 2001). A review of an interagency database (GeoBOB) and the Oregon Natural Heritage Database found no records of any other SS Species locations within or adjacent to the planned harvest units. Besides the previously mentioned federally listed wildlife species, there are no other SS species anticipated to be affected by this proposed action.

Environmental Effects

3.2.2.1 Alternative 1 (No Action)

Project 1 - Density Management Project

This alternative would not conduct any harvest or related actions within the forest stands of the proposed project area. There would be no immediate change to the mid-seral forest conditions within BLM-managed lands in this watershed. Stand development processes would continue unaltered within the forest stands of the project area. A steady incremental increase in snags and down logs would be expected in the smaller size classes due to continuing density mortality processes. Windthrow events, insect damage, and disease processes would contribute irregular pulses of snags and down logs of mostly smaller size classes in the short-term (next 10 years). Due to the current high density of stems, the structural complexity of these stands (large boles, large snags and down logs, large canopy branches, and cavity trees) would be expected to develop rather slowly over the long-term (next 50 years). Dispersal habitat conditions for spotted owls would remain unchanged in the short-term. Suitable nesting habitat for spotted owls and marbled murrelets would likely develop at the same slow pace as the development of structural complexity. Given the current rate of harvest on adjacent private industrial forest lands, the landscape in the immediate vicinity is expected to remain highly fragmented and dominated by early seral and mid seral forest conditions.

Project 2 – CWD Creation Project

This alternative would not create any CWD within the small treatment unit. As with Project 1, the no action alternative would not affect any immediate changes in stand structure or stand development processes. Due to the current high density of stems in this unit, the structural complexity of this stand would develop rather slowly over the long-term (next 50 years). Dispersal habitat conditions for spotted owls would remain unchanged, and suitable nesting habitat for spotted owls and marbled murrelets would likely develop at the same slow pace as the development of structural complexity. Short-term disruption of wildlife use patterns would be avoided. However, the anticipated benefits to future conditions for CWD and late seral forest habitat in this project area would not be achieved.

3.2.2.2 Alternative 2 (Proposed Action)

Density Management Treatment (Project 1)

Effects to Wildlife Habitats

The proposed density management harvest of about 175 acres would change the existing forest structure and alter the development of future forest stand conditions. The direct and indirect changes anticipated to occur to forest habitat characteristics from this project are:

Short-term (less than 10 years)

- light to moderate reduction of canopy closure (resulting canopy greater than 40 percent) over entire treatment area which represents about two percent of the mid seral forests on BLM-managed lands within the Luckiamute 5th field Watershed;
- increased horizontal spatial variability within treated stands (gaps and clumps);
- minor reduction and disturbance to existing CWD material (snags and down logs) resulting from felling, yarding, and road construction;
- reduced recruitment rate of small sized CWD would mostly be offset by immediate creation of larger CWD of desirable size, and augmentation of decadence processes;
- retention and enhancement of hardwood tree and shrub diversity.

Long-term (greater than 10 years)

- a significant recovery of overstory canopy closure within treated stands;
- the gradual transition in structural characteristics of the treated stands to more closely resemble late seral forest (larger diameter trees, sub-canopy development, greater tree species diversity, greater volume and size of hard CWD, canopy gaps);
- extended persistence of hardwood tree and shrub cover diversity.

The proposed action is anticipated to enhance local forest habitat conditions and thereby benefit numerous wildlife species, especially those species that are associated with late seral forest structure and CWD. All proposed units would benefit from augmentation of CWD which would provide larger pieces of hard material sooner than if left untreated, and which would initiate desired decadence processes (topping, girdling) in the larger-sized residual trees.

Effects to Wildlife Species of Concern

The proposed action is considered to be no effect to marbled murrelets and spotted owls since no suitable habitat will be modified and neither of these species is known to occur in this area. However, the proposed action is considered to be a may affect, not likely adverse affect to spotted owl critical habitat, because it would modify a small amount (3.7 percent) of the available dispersal habitat within CHU OR-45. The short-term reduction in canopy closure may slightly diminish the quality of dispersal habitat for owls. Since the entire project area would average more than 40 percent canopy closure, the treated stands are anticipated to retain their function as dispersal habitat for spotted owls in the short-term, and would likely achieve suitable habitat quality for spotted owls in the long-term at a faster rate than if left untreated.

To address concerns for potential effects to critical habitat for spotted owls, the proposed action will be consulted upon with the U.S. Fish and Wildlife Service, as required under Section 7 of the ESA.

Consultation for this proposed action will be accomplished by its inclusion within a programmatic Biological Assessment (BA) that analyzes all projects that may modify the habitat of listed wildlife species on federal lands within the Northern Oregon Coast Range during fiscal years 2009 and 2010. This proposed action has been designed to incorporate all appropriate design standards likely to be included in the pending BA. Upon completion of consultation, if any additional design standards are set forth in a Biological Opinion or Letter of Concurrence, then these standards would be incorporated into the design of this project prior to issuance of a decision record for these projects.

No other SS species are anticipated to be adversely affected by these proposed projects.

Site-specific concerns for all wildlife species have been adequately addressed and minimized by design features incorporated within this proposed action alternative. Potential negative effects such as disturbance and disruption of wildlife use patterns, temporary increase in road density, and habitat alteration are anticipated to be short-term and local in nature, and would not contribute to the need to list any SS Species.

Snag/CWD Creation (Project 2)

Managing CWD and enhancement of decadence processes within a forested environment is recognized as an important component in maintaining forest health and restoring late-successional forest conditions (Rose, et al. 2001, Hagar 2007, Mellen, et al. 2006). This proposed action would enhance CWD structure and help differentiate forest canopy conditions within the proposed CWD treatment unit. This would result in a short-term and minor reduction in forest canopy conditions within this unit. A short-term disruption in the current patterns of use by resident wildlife species is also likely. There are no known sites of any SS Species within the proposed treatment unit. This action would have no effect on spotted owls, marbled murrelets, or their designated critical habitat. Although it would slightly diminish forest canopy conditions; canopy closure would remain above 60 percent for the treated units, and these units would continue to function as dispersal habitat for spotted owls.

3.2.2.3 Cumulative Effects

Within the Northern Oregon Coast Range, the condition of dispersal habitat for spotted owls is a matter of elevated concern (USDI-FWS 1990; USDI-FWS 1992; Courtney et al. 2004). The density management thinning (175 acres) would alter about 3.7 percent of the available dispersal habitat in CHU OR-45. There has been only one other BLM density management thinning (Maxfield Creek, 270 acres) sold within this watershed since the inception of the NWFP and Salem RMP, and which lies outside of this CHU. There are no other density management thinnings planned within this watershed in the foreseeable future. Dispersal habitat currently comprises about 68 percent of the federal forest lands within CHU OR-45. Since the proposed thinning harvest and CWD creation are designed to maintain at least 40 percent canopy closure, the treated stands would continue to function as dispersal habitat. Thus, these projects would not contribute to any cumulative loss of dispersal habitat within CHU OR-45, but rather these treatments would likely provide long-term beneficial effects to the quality of critical habitat.

Due to ecological succession and forest management, the amount of habitat in each seral stage within the local watersheds is not stagnant, but constantly in transition from early open habitats toward mature forest stands. Thinning harvests and habitat restoration treatments such as the proposed action would alter existing forest structure, yet these treatments do not result in a loss of habitat for most of the wildlife species that are known or suspected to use these forests. The cumulative impact on habitat

availability for wildlife species of concern resulting from the planned treatments is considered negligible.

3.2.3 Soils

(IDT Reports incorporated by reference: Hydrology / Soils Specialist Report Abstracts Cold Springs Timber Sale pp. 1 to 9)

Affected Environment

Density Management Treatment (Project 1) and Snag/CWD Creation (Project 2)

The project areas contain Siletz River Volcanics and related rock; these are composed primarily of submarine basalt lava flows interbedded with breccia, sandstone, and siltstone.

Slopes in the project area range from 0 to 85 percent. The maximum slope in the harvest area is about 65 percent. There is a potential for moderate to severe landslides on all slopes greater than 60 percent. In the project area, the small tributary drainage in the northwest corner of Unit 3B has been identified as having a moderate hazard rating for landslides. No landslide scars have previously been identified in the project area (MEGAWA, 1998 and LAAWA, 2004, MP-1&2).

Moderately compacted soils still exist in scattered skid trails that date back to the original logging that was done in the proposed project area in the 1950s. Less than one percent of the proposed project area is occupied by distinguishable skid trails. There is no evidence of recreational vehicle use on these trails. The skid trails and old haul roads are generally less than 12 feet in width so the timber stands are fully occupied by tree canopies. Most of these trails have grown over with small trees and brush and have partially recovered.

There are two primary management concerns with the soils found in the project area:

- the potential for surface soil displacement, surface erosion and dry ravel and;
- the potential for soil compaction.

Soil displacement and erosion are of greatest concern in Units 3A and 3B where the soil layer is shallow, slopes are steep, and there is a high content of coarse fragments in the soil. With increasing slope, the surface soil is subject to dry raveling if the vegetation and litter layer is removed. Under wetting/drying or freezing/thawing conditions, the surface soil particles can detach and would migrate down slope if the vegetation, litter and debris layer is absent. This effect is most prevalent for slopes over 60 percent.

Due to the moderate to high amount of clay and silt size particles in the Valsetz soils (SE portion of Unit 3B), they are prone to becoming compacted when subjected to pressure from heavy equipment, dragging logs etc. When soils are subjected to pressure from logging activities during periods of high soil moisture, the degree and depth of compaction will generally be greater. Once compacted, fine textured soils are very slow to recover. There is scattered, existing evidence of compaction on site, dating to the logging in the 1950s. Compaction of the soil can reduce site productivity by limiting/restricting root growth in the compacted soil as well as limiting the movement of oxygen, carbon dioxide and water into, out of, and within the soil. Compaction reduces infiltration rates and can result in increased rates of surface water accumulation and runoff.

The steeper portion of Unit 3B (north of Road 9-7-3) would be skyline yarded so there would be limited impacts to soils. The portion of the unit between Road 9-7-3 and Road P1 is scheduled to be ground based harvested and there is potential for soil compaction. Minimizing the compaction of soils in this portion of the unit would be accomplished by maintaining vegetation, litter and debris on the soil surface, and operating in the dry season.

Environmental Effects

3.2.3.1 Alternative 1 (No Action)

Density Management Treatment (Project 1) and Snag/CWD Creation (Project 2)

Potential impacts to soils from the proposed actions would not occur. Soils conditions and trends would continue as described under the Affected Environment section above.

3.2.3.2 Alternative 2 (Proposed Action)

Density Management Treatment (Project 1)

Compaction and disturbance/displacement of soil:
Tree harvest and yarding could increase surface soil displacement, surface erosion, dry ravel and soil compaction. The aerial extent and degree of additional compaction expected to result from this project, would remain within accepted district guidelines (10 percent or less).

Skyline yarding:
The steepest areas in the project area, (with the most fragile soil types) would be skyline yarded. Skyline yarding corridors would affect about three percent of the skyline units or a total of approximately 3.7 acres, (as a percentage of the total project area approximately 2.1 percent). Impacts from skyline yarding usually result in light compaction of a narrow strip less than four feet in width. Skyline yarding would occur on areas with deeper soils, where there is less risk of soil erosion or dry ravel.

Ground based yarding:
For those portions of units using ground based yarding systems, impacts would vary depending on whether a harvester/forwarder system, hydraulic loaders or crawler tractors are used, how dry the soils would be when heavy equipment operates on them, and how deeply covered with slash the soils in the skid trails would be. In tractor skid trails, a moderate amount of top soil displacement and moderate to heavy soil compaction could occur depending on the amount of use. In harvester/forwarder skid trails, soil displacement would be minimal and soil compaction would be light to moderate.

For crawler tractor systems, if the suggested design measures are followed, (soils are dry, and equipment operates on some slash), soil impacts would be expected to result in moderate to heavy, fairly continuous compaction within the landing areas and the main skid trails. Impacts would be light to moderate and less continuous on less traveled portions of skid trails. If yarding is done using crawler tractors for all the proposed ground based units (53 acres), the percentage of total tractor unit area impacted by surface disturbance and soil compaction as a result of skid trails would be approximately 6 to 8 percent (approximately 3 to 4 acres), or approximately 2.3 percent of all the proposed unit areas.

If harvester/forwarder systems or hydraulic loaders are used and the suggested design measures are followed (soils are fairly dry and equipment operates on an adequate layer of slash), skid trails are expected to result in light to moderate compaction in two discontinuous, narrow strips less than three feet in width. If a harvester/forwarder system or hydraulic loaders is used for the entire proposed ground based area (53 acres), the percentage of total ground based unit area impacted by surface disturbance and soil compaction as a result of skid trails would be approximately two to five percent (approximately 1 to 2.5 acres), affecting approximately 1.4 percent of the total proposed unit areas. The total area of harvester/forwarder skid trails would be approximately three acres. Very little top soil loss or soil displacement would occur. The effect on overall site productivity from light to moderate compaction on less than one percent of the total proposed project area would be expected to be low (no measurable reduction in overall yield for the project area).

Some of the potentially impacted acreage listed above, includes already existing skid trails from previous logging in the late 1950s. Where practical, portions of these existing trails would be used for harvest roads for this project. As a result, the amount (acreage) of new or additional harvest impacts would be less than the totals listed above. For the project, the total (new and existing) area of impacted ground is not expected to exceed the 10 percent district guideline for aerial extent of soil impacts listed in the Salem District ROD.

Landings:
Potential impacts to soil resources include the additional area used for landings. For all landings on BLM-managed lands, a portion of the existing haul road or a proposed skid trail would be used for equipment to operate on. Some additional ground adjacent to the road surface would be used to turn equipment around on and to sort and deck logs until transport. The degree of soil disturbance and compaction in areas where logs are sorted or decked would be expected to be low. Areas where equipment turns or backs around on multiple times would experience heavy compaction and disturbance to the top soil layer.

Approximately 95 small landings would be needed to harvest the proposed units. Fifty-eight landings would be used for skyline yarding, Thirty-seven landings would be used solely for ground based yarding. Almost all of the landings would use existing road surfaces or clearings. Landings constructed on roads would use the road surface for approximately half of the landing. The additional area adjacent to the road that would be needed for a landing is estimated to be approximately 600 square feet per landing. For the entire proposed project area this amounts to a total of 9.4 acres for all landings on BLM-managed lands (as a percentage of the total project area less than six percent).

Road Work (road construction, reconstruction, renovation, skid trail construction and blocking):
Constructing approximately 4,600 feet of new roads would result in loss of topsoil and compaction of sub-soil on approximately three acres. The currently forested land would be converted to non-forest. The roads to be constructed would be located on moderate topography (grades of approximately five to over 20 percent). The total width of the clearing would be expected to be around 20 feet. This narrow clearing would have a minimal effect on overall tree spacing and stocking. All of the new construction and reconstruction would be decommissioned following burning operations, so some recovery back to a forested condition would occur in these areas over time.

Road renovation would result in no change in the amount of current non-forest land. Some encroaching vegetation along these roads would be removed and surface rock would be added where needed. The renovation would improve drainage and road surface conditions, resulting in less road surface erosion into the surrounding area and streams. The renovation work would be expected to

result in some minor short-term roadside erosion. This would most likely occur when the established vegetation in the ditch and culvert catchment areas would be removed in affiliation with the cleaning, reshaping, or culvert installment operations. Litter-fall accumulations and the growth of vegetation generally re-establish within one to two seasons and erosion rates would be expected to return to very low levels thereafter. The addition of extra cross-drain culverts and the road surface reshaping would reduce the volume of water flowing on the road surfaces and could also result in less future erosion.

Blocking skid trails by water-barring and grass seeding would promote out-slope drainage and prevent water from accumulating in large quantities, running down the road surface, and causing erosion. After several seasons, the accumulated litter fall on the road surfaces would further reduce surface erosion potential.

This project includes additional enlargement of a historic rock pit and this area would supply the rock material to construct, reconstruct and renovate the roads in the project area. The rock pit site is located far enough away from stream channels that it does not have any direct connection to a surface water source. It would not result in any change in erosion potentials or productivity.

Site Productivity
The estimated reduction in growth rate for trees on moderate to severely impacted areas is 15 to 30 percent during the first 10 to 20 years of growth. As trees age and become established, the negative effect on growth from soil compaction and displacement becomes less pronounced and growth rates may approach that of trees on similar, undisturbed sites. This is especially true where the area of compaction/displacement tends to be in narrow strips, as is the case with yarding corridors and small landings. If top soil loss/displacement/compaction is severe or more broadly based in aerial extent, then the negative effects would be more pronounced and longer lasting.

For the ground-base yarding units, the effect on project site productivity from the most impacted 3.9 acres (including skid trails and landings) would be a 2.3 percent reduction in overall yield for the ground based units; this assumes tractor yarding exclusively, as impacts from using a harvester/forwarder would be less severe. The effect on project site productivity resulting from skyline yarding landings and corridors, (5.5 acres) would be expected to be a 0.7 percent reduction in overall yield for the proposed skyline yarding unit areas. The effect on overall project site productivity (from all proposed units) would be a 1.5 percent reduction in overall yield for the entire 175 acre treatment area. Worst case expected reduction in productivity for the skid trails would be a 30 percent reduction in yield on those acres.

<u>Snag & CWD Creation (Project 2)</u>

Girdling or overtopping trees for snag creation would not be likely to measurably impact soil resources. Felling trees for CWD would cause minor soil displacement and compaction where the tree falls on the ground. Coarse woody debris would be cut and left in place (no further soil displacement) and the impacts would be of no greater extent than a natural tree fall.

3.2.3.3 Cumulative Effects

Because the effects of the proposed action on soils are expected to be short-term and localized, cumulative effects are not anticipated. The combined effect of each of the proposed actions (density management and snag and CWD creation) would increase the overall amount of compaction and erosion in the project area. However, the amount of these disturbances would be small and local to the

project sites. There are no other known actions which would be enhanced or diminished by these proposed actions.

3.2.4 Water

(IDT Reports incorporated by reference: Cold Springs LSR Enhancement Hydrology Report pp.1 to 11) (Cumulative Effects Analysis for Cold Springs LSR Enhancement pp.1 to 5)

Affected Environment

Density Management Treatment (Project 1) and Snag/CWD Creation (Project 2)

The project area contains headwater tributaries of Teal Creek, Little Luckiamute and Luckiamute Rivers. The projects lie within three 6th-field watersheds: the Upper Luckiamute Watershed, the Middle Little Luckiamute Watershed, and a very small portion of the Teal Creek Watershed, all within the Luckiamute River 5th-field Watershed. The Luckiamute River Watershed is not a key watershed nor identified as a municipal watershed.

Stream channels in the project areas are primarily small, intermittent 1st and 2nd order headwater streams. These stream channels are generally straight, narrow and steep (gradient 8 percent or greater), with moderate to high entrenchment.

During field review of stream channels in the project area, channels were observed to be mostly stable and functional with sediment supplies in the range expected for these stream types. Sedimentation delivery from roads in the project areas are limited and the one location where road sediment is delivered to a channel is proposed to be restored through the implementation of Project 1. No quantitative turbidity data was located for this analysis.

No stream temperature data exists for project area streams due to their intermittent nature. All tributary reaches in the project areas have been identified as having a low risk for temperature increases (LAAWA, 2004, Map MP-6).

The Oregon Department of Environmental Quality's (ODEQ) 1998 303d List of Water Quality Limited Streams (http://waterquality.deq.state.or/wq/303dpage.htm) is a compilation of streams which do not meet the state's water quality standards. A review of the listed streams for the Upper Luckiamute Watershed was completed for this report. The Luckiamute River is listed for high levels of fecal coliform.

There are no known domestic or municipal water rights in the project area. Closest proximity water rights to the projects include: domestic irrigation (lawn and garden), approximately three miles downstream of the BLM-managed lands in Section 3. The nearest domestic water rights are over five miles downstream from the project areas (Water Rights Information System, 2004).

Additional recognized beneficial uses of the stream-flow in the project area include anadromous fish, resident fish, recreation, and esthetic value. Best management practices would be implemented to help eliminate and/or minimize any potential impacts to beneficial uses of the project watersheds.

Environmental Effects

3.2.4.1 Alternative 1 (No Action)

Density Management Treatment (Project 1) and Snag/CWD Creation (Project 2)

The no action alternative would result in a continuation of the condition and trends as described in the MEGAWA, LAAWA, and the Affected Environment section of this report. Cumulative effects to the watershed would continue to be dominated by the management of private lands.

3.2.4.2 Alternative 2 (Proposed Action):

Density Management Treatment (Project 1)

Measurable effects to hydrologic processes, channel conditions, and water quality due to the proposed action are unlikely. Alterations in the capture, infiltration and routing (both surface and subsurface) of precipitation may occur as a consequence of the mechanical removal of trees and reductions in stand density. This effect from the proposed action would be difficult to measure and unlikely to substantially alter stream flow or water quality.

Numerous studies have documented increases in mean annual water yield and increases in summer base flow following the removal of watershed vegetation; vegetation intercepts and evapotranspires precipitation that might otherwise become runoff (Bosch et al. 1982). Thus, it can be assumed that this project would likely result in some small increase in water yield which correlates with the removal of conifers and a reduction in vegetation cover through pile burning. However, other than increased peak flows, an increase in fall and winter discharge from forest activities is likely to have little biological or physical significance (USEPA 1991).

Streamflow:
Density management would affect only 0.2 percent of the forest cover in the Luckiamute River Watershed. Because of the small percentage of forest cover that would be affected by the proposed action, increases to stream flow (mean annual yield, summer base flow) caused by this action alone would not be measurable.

Water Quality

Stream Temperature:
Increases in stream temperature as a result of this action are also unlikely; the SPZs along all surface waters should maintain adequate shading, where it exists. At stream heads, where groundwater and surface water interfaces, stream temperatures are relatively insensitive to change and are likely consistently below ODEQ temperature standards.

Sediment and Turbidity:
It is unlikely that the proposed project would lead to measurable increases in sediment delivery to streams, stream turbidity, the alteration of stream substrate composition, or sediment transport regime. Stream protection zones (no trees would be cut from the stream bank or where roots are stabilizing the stream bank) would eliminate disturbance of streamside vegetation. Tree girdling, piling and burning

of slash would have minimal to no ground disturbance and no activities would take place directly in or adjacent to stream channels.

Dissolved Oxygen and Nutrients:
Since the proposed action is unlikely to result in any measurable increase in stream temperature or sedimentation and would not place large amounts of fine organic material in the stream or alter stream reaeration, it is unlikely that it would have any measurable effect on dissolved oxygen or nutrient levels.

Logging:
Skyline yarding corridors and ground based yarding skid trails, if sufficiently compacted, could route surface water and sediment towards streams. However, several factors would limit the potential for this to occur. Even if compacted, high levels of residual slash left on skid trials and yarding corridors (both machine and cable), would reduce runoff by deflecting and redistributing overland flow laterally to areas where it would infiltrate into the soil. To reduce additional soil compaction, existing skid trails would be used for ground based equipment as much as possible, and the total surface area of landings would be kept to a minimum. To minimize soil compaction and erosion; ground based yarding would occur during periods of low soil moisture (with little or no rainfall). In addition, SPZs in riparian areas have high surface roughness, which function to trap any overland flow and sediment before reaching streams.

Fuels Treatments:
Burning machine and hand piles could produce patches of soil with altered surface properties that restrict infiltration. However, these surfaces would be surrounded by larger areas that could absorb runoff or sediment that reach them. In addition, piles would be burned outside of SPZs and away from standing or running surface water.

Road Work:
The proposed action includes construction of 4,600 feet of new spur roads, reconstruction of 1,500 feet of existing roads and the renovation of three miles of existing roads, including the replacement of one road drainage culvert, and the installation of approximately six ditch relief culverts. Road construction, reconstruction and renovation effects would be limited by restricting work to periods of low rainfall and runoff. The new road construction would occur along contour, near the ridgetop in Unit 3A. All road construction and reconstruction would be outside of the RR, which would minimize the interception/disruption of subsurface flow. Road construction/reconstruction would employ techniques to reduce the concentration of runoff and keep sedimentation to a minimum. Since no additional stream crossings would be constructed, there would be little opportunity for sediment from these surfaces to directly enter streams. To minimize the potential for runoff accumulating on the road surface, following fuels treatments, the new and reconstructed roads would be decommissioned.

During road renovation, impacts to water quality would be expected while drainage structures are being installed and/or replaced. Impacts would be greatest if equipment is operating in and/or adjacent to the stream channels.

The existing rocked road surfaces within the proposed project area have low slopes and are stable. They do not contribute large amounts of sediment to the existing channel network. The lower portion of the Valsetz Mainline Road haul route in North Fork Teal Creek Watershed was analyzed using the WEPP (Water Erosion Protection Process) erosion model to help identify mitigation measures that would be needed to facilitate allowing winter haul from the sale area. The identified measures were

provided to the owner of the road (Weyerhauser Company) and they completed all of the identified measures. The full report and the sediment discussions are included in the hydrology project file.

Impacts of skid trail construction would be the same as those for yarding corridors described above. Following project completion, water-barring and grass-seeding the trails would help to minimize surface runoff and erosion of these trails (this would thereby reduce any sedimentation potential from these roads).

To minimize risk of sediment transport to nearby stream channels, disturbance activities in the rock pit enlargement site would be seasonally restricted.

Snag /CWD Creation (Project 2):

There would be no substantial impacts to water resources from girdling or overtopping trees to create snags or falling trees for CWD. Trees would be selected from outside SPZs and the proposed action would not likely impact stream shade, bank stability or channel structure.

3.2.4.3 Cumulative Effects

The proposed action, when combined with other proposed actions in the Luckiamute River Watershed is unlikely to have detrimental cumulative effects on the hydrologic regime. A 'level 1' analysis was performed to determine the risk of increasing peak flows in the three project area 6th-field watersheds, through density management. The proposed projects would occur in the Upper Luckiamute River (45 percent), the Little Luckiamute River (54 percent) and Teal Creek (1 percent) Watersheds.

These watersheds were initially analyzed for land ownership, vegetation type, age class, and extent of transient snow zone. Using these parameters and the methodology of the *Salem District Watershed Cumulative Effects Analysis Procedure 1994*, a risk factor ("rfactor") was calculated to determine the relative risk or sensitivity of areas to increases in runoff and consequently peak stream flows. Currently, the average rfactor value in these watersheds is "2", which is considered moderate (on a scale of 0 to 3, with 3 = high risk of increases to peak flows).

The assessment indicates a low risk of peak flow enhancement for watersheds that are in the ROS (rain on snow) zone based on the proposed harvest treatment type (thinning). All of the project area activities are located in the ROS zone. Based on the assessment for these projects, the risks of peak-flow enhancement in these watersheds are low.

Due to the small amount of federal land in these watersheds, cumulative impacts to the Upper Luckiamute River, Little Luckiamute River, and Teal Creek Watersheds are likely to continue to be dominated by actions on private lands. Current and likely future management actions on public lands in the watershed include: stand density management through timber sales, road maintenance (drainage improvements, renovations, decommissioning), and riparian treatments. Likely future private actions include: timber management and associated road construction in the highlands and continued settlement and agricultural development in the lowlands.

Because of the small amount of land affected by the proposed action and because the anticipated effects of the proposed action on hydrology would be short-term and localized, the proposed action is not likely to contribute to cumulative effects in the watershed.

3.2.5 Fisheries/ Aquatic Habitat

(IDT Reports incorporated by reference: Cold Springs LSR Enhancement Fisheries Report - pp. 1 to 4)

Affected Environment

Density Management Treatment (Project 1) and Snag/CWD Creation (Project 2)

Oregon Department of Fish and Wildlife (ODFW) habitat surveys have been conducted on the Luckiamute River approximately ½ mile downstream of the project areas (see Fisheries Report - Table 2; ODFW 1995). Impaired habitat conditions were noted for pools, shade, fine sediment, and key wood in the ODFW habitat surveys; conditions are based on ODFW Aquatic Inventory Habitat Benchmarks (Foster et al 2001). Gravel percentages were meeting benchmark conditions in the project affected reach. Width to depth ratio is between desirable and undesirable conditions. The low abundance of key wood is likely impairing the quality and abundance of pool habitat throughout the surveyed reaches. While gravel abundance is considered adequate, the undesirable amount of silt/sand documented in the surveys likely impairs functionality of the gravels as spawning/incubation habitat.

Surveys for fish presence documented the upper limits of cutthroat trout distribution in the project area of the Upper Little Luckiamute sub-watershed (Calver and Snedaker 2006; see Fisheries Report Appendix A - Map 1). No other fish bearing streams were located in the project area based on field review. Fish were documented approximately 1/3 mile downstream of the project area in the Upper Luckiamute sub-watershed.

The unpaved rocked haul route located in the Luckiamute River Watershed crosses approximately 25 perennial and intermittent streams. Based on field review of the stream crossings associated with the proposed haul route there are no fish bearing crossings. The precise upper limits of fish distribution is unknown for most of the affected streams associated with the haul route, therefore, the distance from the stream crossings to resident fish habitat is estimated based on stream slope and potential barriers (Streamnet 2007; BLM 2007; see Fisheries Report - Table 3).

Several fall barriers which form the upper limits for anadromous species have been identified in the Luckiamute River Watershed. The falls at Falls City is the limit for winter steelhead in the Little Luckiamute River (Streamnet 2007). A falls located at the eastern boundary of BLM-managed lands in Township 8 South, Range 6 West, Section 31 is the upper limits for winter steelhead in Teal Creek (Snedaker 2006). Winter steelhead are present in the mainstem of the Luckiamute River up to Township 9 South, Range 7 West, Section 4 (Streamnet 2007).

Threatened and Endangered and Special Status Species or Habitat:

The Upper Willamette River (UWR) steelhead trout is listed as threatened under the ESA. Closest proximity of UWR winter steelhead to the project area is approximately 0.5 miles downstream in the headwaters of the Luckiamute River. Upper Willamette River winter steelhead distribution from the unpaved haul route in the Little Luckiamute River is over one mile downstream, 1.8 miles downstream in Teal Creek, and nearly ? of a mile downstream in the Luckiamute River.

The NMFS has listed Spring Chinook salmon in the UWR Evolutionarily Significant Unit (ESU) as threatened under the ESA. Spring Chinook salmon are known to reside in the lower reaches of the

Luckiamute River, (31 miles downstream of the project area) and 26 miles downstream from the haul route (Streamnet 2007). No effects are anticipated to Chinook salmon or its habitat due to distance to occupied habitat, and this species shall not be addressed further in this analysis.

Oregon chub is listed as endangered under the ESA. Oregon chub historically resided in the lower portions of the Luckiamute River (Scheerer 1999). Currently there are no known chub populations residing in the Luckiamute River Watershed. No effects are anticipated to Oregon chub historic habitat; therefore this species will not be addressed further in this analysis.

Environmental Effects

3.2.5.1 Alternative 1 (No Action):

Density Management Treatment (Project 1)
Current timber stand conditions would be maintained. Expected benefits of thinning riparian stands would not be realized. The existing road network would remain unchanged, with no new road construction and reconstruction. Impacts to aquatic habitat would be unlikely with the implementation of the no-action alternative.

CWD Creation (Project 2)
Current conditions would be maintained. Coarse woody debris recruitment rates would be unchanged and stand conditions would also remain unchanged. Impacts to aquatic habitat would be unlikely with the implementation of the no action alternative.

3.2.5.2 Alternative 2 (Proposed Action):

Density Management Treatment (Project 1)

Logging:
Reductions in canopy closure and vegetative cover can result in changes in peak or base flows which in turn impair the availability or quality of aquatic habitat. The proposed action was considered unlikely to detectably alter stream flows (Wegner 2007). No discernable changes in peak and base flows within the treatment area are anticipated. Therefore, effects to fish habitat downstream are not anticipated.

According to the stream shading sufficiency analysis [based on topography and average tree height (Snook 2007)] done for the proposed treatment units, the proposed SPZs of 50 to 55 feet was sufficient to protect critical shade in the primary shade zone. Within the thinning treatment units, the SPZ widths average 60 feet wide and none less than 50 feet. The proposed vegetation treatment in the secondary shade zone (approximately one tree height from the stream) would not result in canopy reduction of more than 50 percent. The existing shade adjacent to perennial streams in the project area is adequate (Wegner 2007). Channels in the project area that are intermittent/ephemeral are not subject to summer solar warming. Retention of the SPZ and the location of the thinning treatments (primarily adjacent to intermittent channels) would be expected to maintain the existing stream temperature regimes. The proposed action is unlikely to increase in-stream temperatures at the site (Wegner 2007). Based on the shade sufficiency analysis, the hydrology report water quality analysis, and the project design features, the proposed action is unlikely to affect fish habitat both at the treatment site and downstream.

Loss of CWD and LWD due to harvest can affect the stability and quality of aquatic habitat. Based on the silviculture and vegetation report, the proposed action would retain trees which would reach larger diameters earlier compared to the no action alternative, creating natural opportunities for higher quality LWD recruitment in the long-term (Snook 2007). In the short-term, the smaller woody debris would continue to fall from within the untreated SPZs, and larger wood would begin to be recruited from farther up the slopes as the treated stands reach heights of 200 feet. Thus, wood with a larger range of sizes would potentially be recruited into streams over the long-term in treated stands. As short-term recruitment of the existing CWD is expected to be maintained, the proposed action is not expected to cause short-term effects to fish habitat at the site or downstream. In the long-term, the increase in the size of trees in RR LUA could beneficially affect LWD recruitment to the stream channel, thus potentially improving the future quality/complexity of aquatic habitat adjacent to the treatment areas.

Skidding can compact soil and displace soil thus allowing sediment to be transported down slope and potentially to the stream channels. Skyline yarding corridors can also displace soil thus allowing sediment to be transported down slope and potentially to the stream channel negatively affecting stream channel bedload. However, the proposed project actions are unlikely to result in any measurable changes in sediment delivery to the surrounding stream network which could affect the turbidity, substrate composition, or the sediment transport regimes (Wegner 2007). The dominant use of skyline yarding, implementation of SPZs, residual slash, and use of existing skid trails would keep sediment movement to a minimum. The proposed treatments are unlikely to measurably alter dissolved oxygen or nutrient levels. As the proposed actions are not likely to measurably alter water quality characteristics at the treatment sites, they would be unlikely to affect aquatic habitat adjacent to or downstream from the project area.

Road Work:
The proposed new road construction is unlikely to increase drainage network in the watershed as the majority of new construction is located on ridge tops, outside RRs. No new construction would cross any existing stream channels. All new construction and reconstruction would be seasonally restricted to occur during the dry season, (typically May through October) then winterized or decommissioned following fuel treatments. Based on location of new roads and seasonal restrictions, road construction and reconstruction is unlikely to increase sediment or stream flows which may affect stream channels and fish habitat.

All road renovation work would be seasonally restricted to occur during the dry season. The proposed road renovation treatments (rocking, grading, ditchline reconstruction, and cross drain installations/replacement) associated with these crossings would be expected to result in a minor short-term increase in erosion in the winter following work (Wegner 2007), until reestablishment of vegetation in the subsequent growing seasons. Renovation is not proposed in proximity to any fish bearing crossings, (closest stream crossing is 0.2 miles from fish habitat). No short-term impacts to fish or aquatic habitat are anticipated. Due to the distance of road work to fish habitat, most sediment is expected to be assimilated in stream bedload prior to reaching fish habitat (Duncan et al 1987) and any turbidity generated from renovating the non-fish bearing crossings is expected to be undetectable against background turbidity where fish reside. The proposed road renovation work is intended to improve drainage and road surface conditions, resulting in less erosion into the surrounding area over time.

Timber Hauling:
Hauling can increase the risk of sediment reaching stream channels and negatively affect aquatic habitat. Hauling on native surface roads would be seasonally restricted to minimize surface transport

of sediment and reduce maintenance needs during the wet season. All other haul routes would be available for year round hauling, (subject to being shut down during high precipitation events). Based on the hydrology analysis, some sediment is expected to be generated from hauling on the road segments within the Luckiamute River Watershed (Hawe 2006, Wegner 2007). Sediment that may reach the non-fish bearing streams associated with the haul route crossings would likely be assimilated into the channels before reaching fish habitat (Duncan et al, 1987). Recent renovation work completed by Weyerhauser Company on the haul route is expected to nearly eliminate road surface connectivity with the non-fish bearing streams and would serve to prevent sediment reaching downstream fish habitat due to hauling. Placement of site level mitigations, (e.g. silt fences) along one segment of road parallel to North Fork Teal Creek would prevent road surface sediment from reaching this non-fish bearing stream channel and would prevent any sediment from reaching fish habitat downstream. The proposed year round hauling on rocked and paved roads in the Luckiamute River Watershed is not expected to result in any measurable quantity of sedimentation reaching fish bearing streams primarily due to the distance of stream crossings to occupied fish habitat, at least 0.2 miles downstream.

Pile Burning:
Burning piles could produce small areas susceptible to erosion and restricted infiltration (Wegner 2007). However, burn areas would be surrounded by SPZs or vegetation and no burning would occur in SPZs. Slash burning with the use of these mitigating features are not anticipated to negatively affect the aquatic environment.

Snag/CWD Creation (Project 2)
The proposed action is limited to girdling, felling or topping five large trees and 20 small trees per acre over a seven acre area (see EA Map #2). No stream channels are within the project area. Treatments are anticipated to result in negligible ground disturbance, thus risk of sediment movement occurring at the site level is highly unlikely. Treatments are located away from stream channels and distances are sufficient so that no effects to stream temperatures would be anticipated. The low levels of ground disturbance and the distance of treatments from stream channels are not expected to affect LWD recruitment to stream channels. As sediment, temperature, and LWD recruitment are not anticipated to be affected at the site level, these effects would not affect aquatic habitat or fish downstream.

3.2.5.3 Cumulative Effects

The proposed stand treatments are not expected to alter LWD recruitment, stream bank stability, and sediment supply to channels at the Luckiamute River Watershed scale in the short-term or long-term.

Cumulative impacts to fishery resources could occur if proposed actions result in alterations in runoff contributing to changes in flows where fish reside. Based on the Hydrology Reports Analysis of alterations to peak flows in the project area (Wegner 2007) and the Hydrology Cumulative Effects Analysis, (Wegner 2007) changes in flows were considered unmeasurable at the site level and are unlikely to contribute to cumulative effects; subsequently, no cumulative effects are anticipated on aquatic resources.

The Hydrology Report indicated that the proposed treatments were considered unlikely to have detectable effects on stream temperatures and not expected to result in any cumulative effects to temperature (Wegner 2007). No cumulative effects are anticipated for peak flows, streambanks, and instream structure which could also affect temperature. Since no cumulative effects were anticipated for these project activities on temperature, streambank conditions, and peak flows these treatments would not result in cumulative effects for fisheries resources.

Based on the project design criteria, proposed road construction/reconstruction would not occur in the RR LUA. Thus, road construction/reconstruction is not anticipated to affect LWD recruitment or sediment transport to streams at the site level. No cumulative effects are anticipated to instream structure or sediment regimes in Luckiamute River Watershed.

Proposed road renovation activities are unlikely to reach fish habitat and would not be expected to contribute to any long-term cumulative effects. Renovation work conducted in 2007 by Weyerhauser Company on the haul route, in combination with proposed BLM renovation, is expected to result in beneficial effects to aquatic habitat; however, these effects are unlikely to contribute towards any measurable cumulative effects where fish reside.

Hauling may contribute a minor amount of sediment to the stream network during wet season hauling. Most haul routes are located near ridgetops with a limited number of stream crossings. Hauling within the Luckiamute River Watershed is at least 0.2 miles upslope from fish bearing streams. Site level impacts were considered unlikely and would therefore be unlikely to cumulatively affect aquatic resources.

Coarse woody debris treatment (Project 2) was not anticipated to result in any site level effects to fish or aquatic habitat, therefore, the actions associated with Project 2 are not anticipated to contribute to any cumulative effects.

3.2.6 Fuels\Air Quality

(IDT Reports incorporated by reference: Cold Springs LSR Enhancement Report Fuels Report Summary ***pp. 1-)***

Affected Environment

Density Management Treatment (Project 1) and Snag/CWD Creation (Project 2)

Fuels:
The proposed project areas are presently occupied by fairly continuous stands of approximately 45 to 75 year old Douglas-fir timber with some western hemlock, western red cedar and hardwoods. Undergrowth in the timber is a light to moderate growth of: salal, vine maple, sword fern, and red and blue huckleberry. There is a light to moderate accumulation of CWD on the ground.

Approximately 65 percent of the proposed treatment unit areas have predominant aspects of: north, northeast and northwest. The remainder of the area has southerly or flat aspects. Flat to 35 percent slopes are present on approximately 30 percent of the proposed treatment areas. On the remaining areas to be treated, the slope ranges from 35 percent up to approximately 65 percent.

Air Quality:
Air quality in the vicinity of the proposed project is generally very good. Occasional stagnant air conditions do develop and may result in accumulation of particulate mater but generally these are short-lived (lasting less than one week).

Environmental Effects

3.2.6.1 Alternative 1 (No Action)

Density Management Treatment (Project 1) and Snag/CWD Creation (Project 2)

This alternative would result in no change to the affected environment. Short-term impacts to fuels and air quality would be avoided.

3.2.6.2 Alternative 2 (Proposed Action)

Density Management Treatment (Project 1)

Fuels:
Fuel loading, risk of a fire start and the resistance to control a fire, would all increase at the sites as a result of the proposed action. Slash created from timber harvest would add an estimated 7 to 15 tons per acre of dead fuel to the thinned and 10 to 20 tons per acre of dead fuel to the patch cut areas.

Risk of a fire start in the untreated slash would be greatest during the first season following cutting. Within one year the risk of a fire start would greatly diminish. Fire risk would continue to diminish as the area greens up with understory vegetation, and as the fine twigs and branches decompose. Past experience in the geographic area, has shown that in approximately 15 years, untreated slash would generally decompose to the point where it no longer contributes considerably to increased fire risk.

Depending on the amount of large, down wood left on site from logging, the resistance to control would also decrease over time but more slowly. This is what is expected to occur for the areas considered in this proposed action where the slash created would be left in place, untreated.

The resulting total residual dead fuel loading would vary through out the site ranging from 5 to 30 tons per acre. It is expected that about half of the dead fuel tonnage to be left on site would be in the form of down logs and pieces in the 10 inch and larger size class.

Although not the stated purpose of this proposed action, increasing the spacing between the tree crowns would have the beneficial result of decreasing the potential for crown fire occurrence in the treated stands once the slash breaks down.

Air Quality:
The total amount of slash debris expected to be piled for burning is estimated to be approximately 365 tons. Burning under favorable atmospheric conditions in the Northern Oregon Coast Range is not expected to result in any long-term negative effects to air quality in the airshed. Burning of slash would be coordinated with the Oregon Department of Forestry (ODF) in accordance with the Oregon State Smoke Management Plan. This serves to coordinate all forest burning activities on a regional scale to prevent negative impacts to local and regional air sheds.

Snag/CWD Creation (Project 2):

Fuels:
Fuel loading, risk of a fire start and the resistance to control a fire, would all increase slightly at the site as a result of the proposed action. Due to the planned scattered location of the selected trees, the effect on overall fuel loading would be minimal and not likely to add considerably to the risk of a fire start. If a fire were to burn on the site, the scattered CWD trees would pose some additional resistance to controlling the fire. The scattered nature of the CWD trees limits this increase to acceptable, manageable levels. Based on the likely size range of the CWD trees, an estimated 3 to 8 tons per acre of scattered, dead fuel would be added to the treatment area.

The slight increase in risk of a fire start in the untreated slash would be greatest during the first season following cutting. Within one year the risk of a fire start greatly diminishes. Fire risk would continue to diminish as the area greens up with understory vegetation, and the fine twigs and branches decompose.

3.2.6.3 Cumulative Effects

Density Management Treatment (Project 1)

There would be few cumulative effects to these resources, as the effects from the project would be local and/or short lived, and there would be no other uses affecting this resource. Burning of slash piles would be guided by the Oregon State Smoke Management Plan which serves to coordinate all forest burning activities on a regional scale to protect local and regional air sheds. Based on past experience with pile burning in this and other similar areas, there are no expected cumulative effects on air quality from the planned fuels treatment under this proposal.

Although there would be an increase in fuel loading and resultant fire hazard in the short-term, there would be a reduction in the long-term potential of the stand to carry a crown fire. The localized increase in fire risk would revert to back ground levels within 15 years.

Snag/CWD Creation (Project 2)
There would be few cumulative effects to these resources, as the effects from the project would be local and/or short lived, and there would be no other uses affecting this resource.

There would be a slight increase in fuel loading and resultant fire hazard in the short-term but probably not enough to be measurable with any statistical significance (especially considering the discontinuous arrangement of the fuels). The localized increase in fire risk would diminish down to historical back ground levels within 15 years or less.

4.0 Compliance with the Aquatic Conservation Strategy

Existing Watershed Condition

The Cold Springs LSR Enhancement Project areas are in the Luckiamute River 5th field Watershed which drains into the Willamette River.

Four percent of the watershed is managed by BLM and 96 percent is managed by other landowners. Late seral and/or old-growth (greater than 80 years old) forests comprise 35 percent of the BLM-

managed lands in the watershed. We can infer then, that commercial harvest or stand replacement fire has occurred on 65 percent of the BLM-managed lands in the watershed. The earliest harvests on BLM-managed lands have been regenerated and are progressing towards providing mature forest structure. Most of the private industrial lands have been and will continue to be moved from mid seral to the early seral class.

Review of Aquatic Conservation Strategy Compliance:

The projects meet the Aquatic Conservation Strategy in the context of PCFFA IV and PCFFA II [complies with the ACS on the project (site) scale]. The following is an update of how these projects comply with the four components of the Aquatic Conservation Strategy. The projects would comply with:
Component 1 – Riparian Reserves: by maintaining canopy cover along all streams and wetlands would protect stream bank stability and water temperature. Riparian Reserve boundaries would be established consistent with direction from the *Salem District Resource Management Plan*. No new road construction or reconstruction would occur within RR LUA;

Component 2 – Key Watershed: by establishing that the Cold Springs LSR Enhancement projects are not within a key watershed;

Component 3 –Watershed Analysis: The MEGAWA (1998) describes the events that contributed to the current condition such as early hunting/gathering by aboriginal inhabitants, road building, agriculture, wildfire, and timber harvest. The following are watershed analysis findings that apply to or are components of this project:

- Density management (selective thinning and possibly other treatments) in early and mid seral stands will be used where appropriate to accelerate the attainment of late-successional/old-growth forest characteristics on BLM and US Forest Service lands (p. ES-6).

- In project areas less than 110 years of age, manage tree density to increase growth and achieve structural and density diversity (SI&MR 9).

- Management activities in the Riparian Reserves should be used to promote older forest characteristics, attain ACS objectives and move the Riparian Reserves on a trajectory toward older forest characteristics (see Appendix V, "Riparian Reserve Project Design"). Desired riparian characteristics include:

  - ✓ Diverse vegetation appropriate to the water table, geomorphic land type, and stream channel type,
  - ✓ Diverse age classes (multi-layered canopy),
  - ✓ Mature conifers where they have occurred in the past,
  - ✓ Dead standing/down wood,
  - ✓ Stream connected to its floodplain (floodplain inundated every 1 to 3 years),
  - ✓ Stream bank vegetation with adequate root strength to maintain bank stability (SI&MR 10).

- Accelerate, in 40 to 110 year old stands (in both riparian and upland forest habitats), the attainment of large trees with large horizontal branches to provide increased nesting opportunities for marbled murrelets in the shortest time possible. Beginning with the oldest stands first, locations for treatment should occur in stands as follows: those closest to Oregon Coast; then those closest to

existing occupied stands; and then those closest to existing unoccupied LSOG. [Note: This recommended action will also benefit LSOG-dependent species by accelerating the development of structural complexity and increasing the amount of it in these treated stands (SI&MR 17).

- Create Special Habitat Components (snags, CWD, wolf trees, multi-layered canopies) where and when appropriate in stands 40 to 110 years old in riparian and upland forest habitats. Inventory the existing pre- and post-treatment special habitat component conditions. In stands with an average DBHOB of 12 inches or more, use trees which are at least 12 inches in diameter to create snags, coarse down woody debris, and wolf trees if these special habitat components are lacking (SI&MR 18).

- Prioritize density management treatments in stands, including those in Riparian Reserves, to benefit wildlife and aquatic habitat. First priority targets would be the even-aged, densely-stocked stands (50 to 110 years) in the western portion of the Mill and Luckiamute subwatersheds (SI&MR 19).

Component 4 – Watershed Restoration:

These projects have been reviewed against the ACS objectives at the project or site scale with the following results; The no action alternative does not retard or prevent the attainment of any of the nine ACS objectives because this alternative would maintain current conditions. The proposed actions do not retard or prevent the attainment of any of the nine ACS objectives for the following reasons:

Table 10: Projects' Consistency with the Nine Aquatic Conservation Strategy Objectives

Aquatic Conservation Strategy Objectives (ACSOs)	**Project 1 Density Management** (EA section 3.2)	**Project 2 – Coarse Woody Debris Creation** (EA section 3.2)
1. Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features.	Does not prevent the attainment of ***ACSO 1***. Treating Riparian Reserves to increase species vigor, diversity, and CWD would help restore the distribution and complexity of landscape features in the watershed.	Does not prevent the attainment of ***ACSO 1***. CWD creation would increase terrestrial habitat complexity and diversity. the increased structural and plant diversity would ensure protection of aquatic systems by maintaining and restoring the distribution, diversity and complexity of watershed and landscape features.
2. Maintain and restore spatial and temporal connectivity within and between watersheds.	Does not prevent the attainment of ***ACSO 2***. Long-term connectivity of terrestrial watershed features would be improved by increasing the availability and proximity of functioning riparian habitat.	Does not prevent the attainment of ***ACSO 2***. Long-term connectivity of terrestrial watershed features would be improved by enhancing conditions for understory development (structural diversity), increasing the proportion of minor species in the stand (species diversity), increasing growth rates on remaining trees and creating fresh snags and down wood.
3. Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.	Does not prevent the attainment of ***ACSO 3***. No-treatment buffers adjacent to all surface water would maintain the physical integrity of the aquatic system. Some alteration of stream channels would occur during culvert replacement.	Does not prevent the attainment of ***ACSO 3***. Management activity is not likely to cause any alteration in water flows that could affect channel morphology.
4. Maintain and restore water quality necessary to support healthy riparian,	Does not prevent the attainment of ***ACSO 4***. No measurable effects to water quality would be anticipated	Does not prevent the attainment of ***ACSO 4***.

Aquatic Conservation Strategy Objectives (ACSOs)	**Project 1 Density Management** (EA section 3.2)	**Project 2 – Coarse Woody Debris Creation** (EA section 3.2)
aquatic, and wetland ecosystems.	from the proposed action. No-treatment buffers and project design features would minimize any potential contaminants from reaching water bodies (including fine sediments, fire retardant, and herbicides).	
5. Maintain and restore the sediment regime under which aquatic ecosystems evolved.	Does not prevent the attainment of ***ACSO 5***. The proposed project is designed to minimize the risk of a mass soil movement event (slump/landslide). No-treatment buffers and project design features would minimize any potential sediment from harvest, burning, and road-related activities from reaching water bodies.	Does not prevent the attainment of ***ACSO 5***. Tree removal is not proposed, therefore, increases in sediment delivery to streams due to mass wasting are unlikely to result from this action.
6. Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing.	Does not prevent the attainment of ***ACSO 6***. The proposed alternative would not measurably alter instream flows. The proposed timber harvest would affect only 0.5 percent of the current forest cover in the watershed – well below the 20 percent threshold for measurable effects.	Does not prevent the attainment of ***ACSO 6***. Any changes in the capture and routing of precipitation would likely return to pre-treatment conditions as the remaining forest fills out. Increases in mass wasting and alterations in sediment regime as a result of this action are of low probability.
7. Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.	Does not prevent the attainment of ***ACSO 7***. Project design features, such as no-treatment buffers, coupled with the small percent of vegetation proposed to be removed, would maintain groundwater levels and floodplain inundation rates.	Does not prevent the attainment of ***ACSO 7***. The actions under this proposal would affect less than 0.2 percent of the forest cover in the watershed. Therefore, detectable direct or indirect effects to streamflow as a result of this action are unlikely.
8. Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands.	Does not prevent the attainment of ***ACSO 8***. Vegetation management within the Riparian Reserve would help restore structural diversity.	Does not prevent the attainment of ***ACSO 8***. No treatments within Riparian Reserves are proposed.
9. Maintain and restore habitat to support well-distributed populations of native plant, invertebrate and vertebrate riparian-dependent species.	Does not prevent the attainment of ***ACSO 9***. Density management would help restore RR habitat by increasing species and structural diversity, and increasing CWD.	Does not prevent the attainment of ***ACSO 9***. Habitat to support well distributed riparian-dependent and riparian associated species would be restored by altering forest structural characteristics and amending CWD conditions.

Project 1 – Density Management - Over the long-term, this project should aid in meeting ACS Objectives by speeding the development of older forest characteristics in RR, including increased large wood recruitment for stream channels. In addition, more open stands would allow for the growth of important riparian species in the understory. This project would also promote stand diversity, provide more light to accelerate growth of selected conifers and promote species diversity.

Project 2 – Snag/CWD Creation- This project would restore watershed conditions by providing a gradual transition in structural characteristics of the treated stands that would more closely resemble late seral forest.

5.0 LIST OF PREPARERS

Table 11: List of Preparers

Resource	Name	Initial	Date
Cultural Resources	Dave Calver	DAC	1-22-08
Hydrology/Water Quality/Soils	Steve Wegner	SJW	1-22-08
Silviculture/Riparian Ecology	Hugh Snook	HWS	1/22/08
Botany TES and Special Status Plant Species	Ron Exeter	RE	JAN 22 2008
Wildlife TES and Special Status Animal Species	Scott Hopkins	SH	1/22/08
Fuels/Air Quality	Tom Tomczyk	TST	1/22/08
Fisheries	Scott Snedaker		
Recreation	Traci Meredith	TMM	1/22/08
NEPA	Dan Schreindorfer	DS	1/22/08

6.0 CONTACTS AND CONSULTATION

6.1 Agencies, Organizations, and Persons Consulted (ESA Section 7 Consultation)

U. S. Fish and Wildlife Service (USFWS)
To address concerns for potential effects to spotted owls, the proposed action will be consulted upon with the USFWS, as required under Section 7 of the ESA. Consultation for this proposed action will be accomplished by its inclusion within a programmatic Biological Assessment (BA) that analyzes all projects that may modify the habitat of listed wildlife species on federal lands within the Northern Oregon Coast Range during fiscal years 2009 and 2010. This proposed action has been designed to incorporate all appropriate design standards likely to be included in the pending BA. Upon completion of consultation, if any additional design standards are set forth in a Biological Opinion or Letter of Concurrence, then these standards would be incorporated into the design of this project prior to issuance of a decision record for this EA.

National Oceanic Atmospheric Administration National Marine Fisheries Service
The proposed actions associated with the Cold Springs Density Management Project (Project 1) are within 0.38 miles to the listed fish or listed critical habitat in the Upper Luckiamute sub-watershed. A determination has been made that this proposed project would be a 'May Affect' on UWR steelhead trout. The 'May Affect' determination is based on the proximity of the density management treatments to the Upper Luckiamute River in the Upper Luckiamute sub-watershed where listed fish reside. Due to the 'May Affect' determination this project would need to have consultation completed with the NMFS prior to implementation. Compliance of this project with guidance described in *Endangered Species Act Section 7 Informal Consultation for the 2007-2009 Thinning Timber Sale Programmatic on the Mt Hood and Willamette National Forest and portions of the Eugene and Salem Bureau of Land Management, 20 Watersheds within the Oregon Portion of the Lower Columbia/Willamette River Recovery Domain* (NMFS 2007) would meet consultation obligations for the 'May Affect' actions of the Cold Springs Density Management Project (Project 1).

The UWR spring Chinook salmon ESU are listed as threatened under the ESA. Oregon chub is listed as endangered under the ESA. As previously stated these species are not within the project area,

residing more than 26 miles downstream from any proposed activities. Therefore, no effects are anticipated. No consultation would be necessary for these species.

Protection of EFH as described by the Magnuson/Stevens Fisheries Conservation and Management Act and consultation with NOAA NMFS is required for all projects which may adversely affect EFH of Chinook and coho salmon. The thinning project area is at least 3.5 miles from nearest habitat utilized by coho salmon (Streamnet 2007). The nearest stream crossing on the haul route is approximately one mile from coho salmon habitat. The proposed Projects 1 and 2 are not expected to adversely affect EFH due to distance of all activities associated with the projects from occupied habitat in the Luckiamute River Watershed. Consultation with NOAA NMFS on EFH is not required for these projects.

6.2 Cultural Resources - Section 106 Consultation and Consultation with State Historical Preservation Office:

The project area occurs in the Oregon Coast Range Mountains. Survey techniques are based on those described in Appendix D of the *Protocol for Managing Cultural Resource on Lands Administered by the Bureau of Land Management in Oregon*. Post-project survey would be conducted according to standards based on slope defined in the Protocol appendix. Ground disturbing work would be suspended if cultural material is discovered during project work until an archaeologist can assess the significance of the discovery.

6.3 Public Scoping and Notification-Tribal Governments, Adjacent Landowners, General Public, and State County and local government offices:

- A scoping letter, dated August 11, 2005, was sent to 42 potentially affected and/or interested individuals, groups, and agencies. – Two responses were received during the scoping period.

- A description of the project was included in the December 2005, March, June, September and December 2006, and March, June, September and December 2007 project updates to solicit comments on the proposed projects.

6.3.1 30-day public comment period

- The EA and FONSI will be made available for public review January 30, 2008 to February 28, 2008. The notice for public comment will be published in a legal notice by the *Polk County Itemizer Observer* newspaper. Comments received by the Marys Peak Resource Area of the Salem District Office, 1717 Fabry Road SE, Salem, Oregon 97306, on or before February 28, 2008 will be considered in making the final decisions for these projects.

7.0 MAJOR SOURCES AND COMMON ACRONYMS

7.1 Major Sources

7.1.1 Interdisciplinary Team Reports:

Exeter, R. 2007. Botanical Report. Marys Peak Resource Area, Salem District, Bureau of Land Management. Salem, OR.

Hopkins, S. 2007. Biological Evaluation (FY2008 Cold Springs LSR Enhancement Project) . Marys Peak Resource Area, Salem District, Bureau of Land Management. Salem, OR.

Meredith, T. 2007. Recreation/Rural Interface/VRM Report. Marys Peak Resource Area, Salem District, Bureau of Land Management. Salem, OR.

Snedaker, S. 2007. Cold Springs Density Management Project Environmental Assessement Fisheries. Marys Peak Resource Area, Salem District, Bureau of Land Management. Salem, OR.

Snook, H. 2007. Specialist Report Abstract, Cold Springs Project, Forest Vegetation and Silviculture. Marys Peak Resource Area, Salem District, Bureau of Land Management. Salem, OR.

Tomczyk, T. 2007. Cold Springs Project and Timber Sale Proposal Fuels Report. Marys Peak Resource Area, Salem District, Bureau of Land Management. Salem, OR.

Wegner, S. 2007. Cold Springs Environmental Assessment Soils/Hydro Report. Marys Peak Resource Area, Salem District, Bureau of Land Management. Salem, OR.

7.1.2 Additional References:

USDA. Forest Service, USDI. Bureau of Land Management. 2004. 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. Portland, OR.

USDA. Forest Service, USDI. Bureau of Land Management. 2000. Delineation and Management of Reserve Pair Areas within Oregon's Northern Coast Range Adaptive Management Area. Salem, Oregon.

USDA. Forest Service, USDI. Bureau of Land Management. 1998. Late Successional Reserve Assessment for Oregon's Northern Coast Range Adaptive Management Area (Late-Successional Reserve RO269, RO270 and RO807). Salem, Oregon.

USDA. Forest Service, USDI. Bureau of Land Management. 1994. 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. Portland, OR.

USDA. Forest Service, USDI. Bureau of Land Management. 1994. Final Supplemental Environmental Impact Statement Management of Habitat for Late Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl. Portland, OR.

USDI. Bureau of Land Management. 1995. Salem District Record of Decision and Resource Management Plan. Salem, OR.

USDI. Bureau of Land Management. 1994. Salem District Proposed Resource Management Plan/Final Environmental Impact Statement. Salem, OR.

USDA Forest Service and USDI Bureau of Land Management. 2007. Biological Assessment, Fiscal year 2009/2010 habitat modification activities in the North Coast Province which might affect bald eagles, northern spotted owls or marbled murrelets.

Earth Design Consultants Inc, 2004. Luckiamute/Ash Creek/American Bottom Watershed Assessment. Corvallis, OR

USDI. Bureau of Land Management. 1998. Rowell Creek, Mill Creek, Rickreall Creek, and Luckiamute River Watershed Analysis. Salem, Oregon

Endangered Species Act Section 7 Informal Consultation for the 2007-2009 Thinning Timber Sale Programmatic on the Mt Hood and Willamette National Forest and portions of the Eugene and Salem Bureau of Land Management, 20 Watersheds within the Oregon Portion of the Lower Columbia/Willamette River Recovery Domain (NMFS 2007)

8.0 APPENDICES

8.1 Appendix 1 - Response to Scoping Comments

A scoping letter, dated August 11, 2005, was sent to 18 potentially affected and/or interested individuals, groups, and agencies. Two responses were received during the scoping period.

8.1.1 Summary of comments and BLM responses

The following addresses comments raised in two letters from the public received as a result of scoping (40 CFR Part 1501.7). Additional supporting information can be found in Specialists' Reports in the NEPA file.

8.1.1.1 Oregon Natural Resource Council (March 30, 2004)

1. Comment: *Road building in LSR's and CHU's is inappropriate. Although temporary roads cause less impact, temporary roads still channelize water, cause erosion and conduct invasive weeds. ONRC believes it is possible to conduct thinning without extensive new road construction. Some weed introduction and soil disturbance can be off-set by the thinning operation, however extensive road construction is not justified by a small restoration project.*

Response: During project planning, the Cold Springs LSR Enhancement IDT strived to minimize new road construction/reconstruction on this project. Harvest reconnaissance indicates some new road construction/reconstruction would be necessary for operability due to topography constraints present in the project area. Two alternatives that would have required additional road construction than the proposed action were considered but dropped from further analysis (See EA Section 2.4, pg. 15).

Best Management Practices would be followed during road construction/reconstruction to reduce the risk of adverse effects to vegetative, hydrologic, aquatic and soil resources.

2. Comment: *The BLM needs to complete a cost/benefit analysis for each new road to help inform the decision maker in balancing the costs and benefits of thinning and roading. The potential benefits of thinning must be weighed against the certain immediate costs of road construction. Even temporary roads degrade the ecosystem for years to come".*

Response: Some new road construction is necessary for operability due to topography present in the project area. All new road construction would be blocked to vehicular traffic following harvest and would be located outside RR (generally on ridgetop locations). Best Management Practices would be followed during road construction to reduce the risk of adverse effects to aquatic resources. The project design feature of revegetating exposed soil areas by sowing with Oregon Certified (blue tagged) red fescue (*Festuca rubra*), or sowing with a wildlife vegetation mix and applied at a rate equal to 40 pounds per acre or sowing/planting with other native species as approved by the resource area botanists are expected to abate the establishment of noxious weeds.

The following table includes the length of each new road to be constructed and the number of acres accessed by each road and then computed the cost:benefit ratio of the number of acres treated per mile of road construction.

Road #	Primary Road Work	Miles	Associated Unit Acres	Acres of Unit/Mile of Road
P1	New	0.33	37	112
P2	New	0.36	38	106
P3	New	0.12	8	67
P4	New	0.07	9	129

3. Comment: *Ground based logging equipment may cause significant soil disturbance that will not be offset by the intended benefits to the vegetation.*

Response: As noted in EA (pp. 36 - 37) "If yarding is done using crawler tractors for all the proposed ground based units (50 acres), the percentage of total tractor unit area impacted by surface disturbance and soil compaction as a result of skid trails would be approximately 6 percent to 8 percent (approximately 3 to 4 ac.), or: approximately 2.3 percent of all the proposed unit areas".

Some of the potentially impacted acreage listed above, includes already existing skid roads from previous logging in the late 1950s. Where practical, portions of these existing roads would be used for harvest roads for this project. As a result, the amount (acreage) of new or additional

harvest impacts would be less than the totals listed above. For the project, the total (new and existing) area of impacted ground is not expected to exceed the 10 percent district guideline for aerial extent of soil impacts listed in the Salem District ROD.

4. Comment: *The stands in the Cold Springs Late Successional Reserve Enhancement project are older than we would prefer to see the BLM working in.*

Response: Approximately 85 percent of the project area includes stands that are less than 50 years of age and consist of Douglas-fir and western hemlock dominated forest where density management type projects typically occur.

5. Comment: *ONRC supports variable density thinning where areas of light, moderate and dense patches are created along with ¼ to ½ acre gaps and dense patches. Please use variable density thinning and protect all remnant older trees and snags*.

Response: We always try to achieve variable density in our LSR treatments and believe that our prescription would accomplish that. We plan to create canopy gaps over the project area which would equal approximately five percent of the treatment area, and also to leave small un-thinned areas (clumps). The clumps and gaps would range from approximately 0.5 to 1 acre, as recommended by Andrew Carey and Jerry Franklin in the reference you gave us (http//www.reo.gov/ama/franklin2001.htm). We believe the smaller gaps would promote increased growth of shrub species (rhododendron and vine maple), and the larger gaps would promote conifer understory species such as western red cedar and western hemlock, which we plan to plant. Within the larger gaps we would leave large trees or trees with other wildlife values, releasing them completely so as to promote epicormic branching and deep crowns. Between the gaps, we plan to mark the project in a range of basal areas, probably by assigning each marker a different basal area, with the goal of achieving spacing variability at the scale of approximately ½ acre. We would also reserve all hardwoods to give us additional spacing variability.

No remnant older trees exist within the proposed density management area.

We realize that large diameter snags are important legacy features that should be retained in treatment units, and we understand your concern that safety/operational issues should not diminish these structures. We would purposely design most of our un-thinned clumps to protect one or more snags. Historically it has been our fairly extensive experience that the loss of large diameter snags for operational/safety reasons rarely happens in our thinning units, but is occasionally necessary in close proximity to roads and landings, and within skyline yarding corridors/ground based skid trails.

6. Comment: *The project would commercially thin stands in critical habitat for the northern spotted owl. No further degradation of habitat should occur.*

Response: The EA included an analysis of impacts to all federally listed wildlife species, including northern spotted owls. The proposed action would be considered no effect to spotted owls since no suitable habitat would be modified and this species is not known to occur in the project area. The proposed action would occur within the small CHU OR-45 that consists of just 6,965 acres of BLM lands. The proposed project would affect about 2.6 percent of the BLM lands in this CHU, while over 68 percent of this CHU is currently functioning as dispersal habitat. The short-term reduction in canopy closure may slightly diminish the quality of dispersal habitat for

owls, but since the entire project area would average more than 40 percent canopy closure, the treated stands are anticipated to retain their function as dispersal habitat for spotted owls in the short-term and would likely achieve suitable habitat quality for spotted owls in the long-term at a faster rate than if left untreated.

Any negative effects to federally listed wildlife species or their designated critical habitat would be subject to consultation with the USFWS. BLM must provide a credible assessment of potential effects to spotted owls and their critical habitat before the USFWS can render their opinion on this project. The BLM would then be bound by the Terms and Conditions set forth in the Service's Biological Opinion which should ensure that the proposed action would indeed contribute to long-term recovery for the spotted owl.

7. Comment: *Impacts on old-growth species should be discussed in detail in the EA. This should include a functionality analysis of dispersal for the northern spotted owl and analysis of effects on other special status species listed in management plans. Special attention to snag habitat is needed*.

Response: Impacts to listed species in the RA would be included in Appendix A, within the Biological Evaluation of the Cold Springs LSR Enhancement project NEPA file.

The proposed action is anticipated to enhance local forest habitat conditions and thereby benefit numerous wildlife species, especially those species that are associated with late seral forest structure and CWD. The proposed project area has moderate to high levels of large CWD in advanced stages of decay and would benefit from augmentation of CWD which would provide larger pieces of hard material sooner than if left untreated, and which would initiate desired decadence processes (topping, girdling) in the larger-sized residual trees.

8.1.1.2 American Forest Resources Council

1. Comment: *"The AFRC would like to see all timber sales be economically viable."*

Response: Economic feasibility is one of the many factors taken into account when offering a timber sale. Road work costs, yarding costs and other incidental costs versus the acreage and volume taken are calculated and an Interdisciplinary Team of specialists including those in EA Section 5.0, Table 11, come to a consensus on what alternative to pursue for analysis.

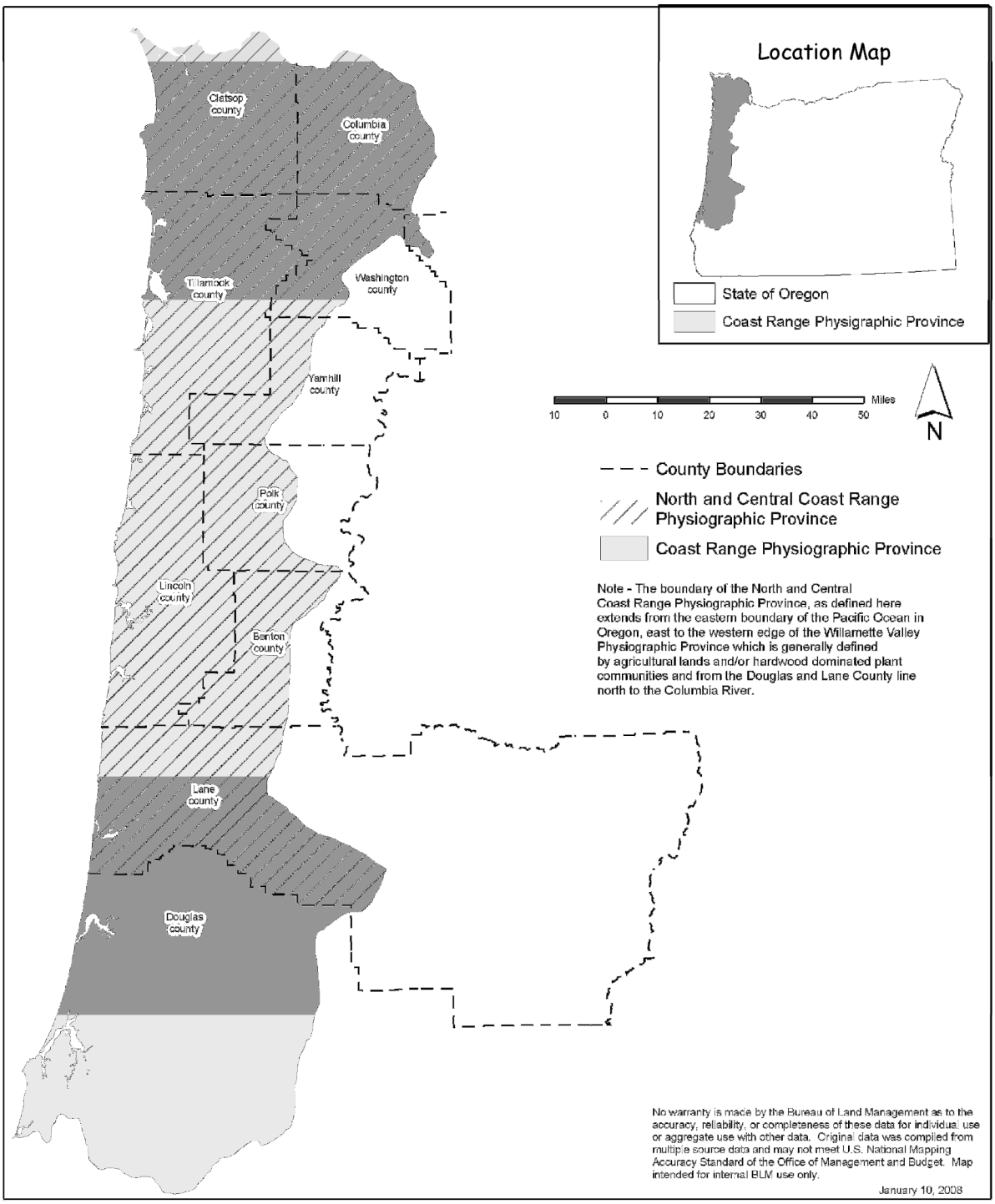
2. Comment: *Seasonal restrictions have a cost to the Purchaser and result in a lower bid cost. AFRC would encourage the BLM to allow winter hauling since this would provide wood for the mills and work for the loggers during the winter months.*

Response: As stated in the EA (Section 2.2.2 on pp. 10 and 11) winter hauling would be allowed on the Cold Springs LSR Enhancement timber sale except during periods of rainfall when water is flowing off of road surfaces.

3. Comment: *The AFRC would like to see flexibility for fuels treatments. Rather than specifying a method of accomplishing resource objectives, BLM should identify objectives and any limitations to resource disturbance. The purchaser could then identify the method they could implement given their particular employee skills and equipment mix.*

Response: The purpose of the fuels treatment recommended in the EA is to reduce or mitigate slash hazard and risk along roads and landings or to meet silvicultural objectives (planting) in the patch cut areas. Besides the option of hand or machine piling of slash concentrations, the EA (p. 13) specifies: "When ever possible alternative waste recycling of slash material should be encouraged. This may be: providing firewood to the public, chipping for co-gen power production, chipping for soil amendments, soil protection, etc." This is an attempt to provide some flexibility that will still meet the objective of reducing fire hazard and risk or meeting silviculture objectives. However, leaving slash concentrations along roads and landings would not be an option.

4. Comment: *The AFRC would like to see thinning treatments with smaller (25-60 feet) no cut buffers to achieve management objectives of moving the RR into Late-Successional forest faster. We encourage the BLM to maximize opportunities in the RR LUA*

Response: The width of the no cut buffers for this project is 50 feet which falls into the desired range that you indicated you would like to see thinning occur. The primary shade zone (USDI 2005b) width is determined by the existing height of the riparian trees and the slope of the ground in the unit. This distance ranges from 50 to 60 feet slope distance. As mentioned above the minimum no cut width for this project is 50 feet which falls into your desired widths.

Cold Springs LSR Enhancement EA
Appendix 2 - North and Central Coast Range Physiographic Province Map