Yamaha LSR Enhancement/Aquatic Habitat Restoration
Environmental Assessment and
Finding of No Significant Impact

Environmental Assessment Number OR-080-06-18

October 16, 2007

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

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BLM
Salem District

Abstract: This environmental assessment (EA) discloses the predicted environmental effects of six projects on federal and private land located in Township 14 South, Range 7 West, Sections 13, 14, 15, 21, 23, 24, 25, 26 and 36 and Township 14 South, Range 6 West, Section 19 Willamette Meridian and within the Upper Alsea River Watershed.

- ✓ Project 1 (LSR Enhancement) is a proposal to hasten the development of late-seral wildlife habitat stand structure on approximately 159 acres of early and mid-seral forest land.
- ✓ Project 2 (Young Stand Enhancement) is a proposal to promote late-seral forest conditions on approximately 23 acres within a 20 year old stand by variable density management.
- ✓ Project 3 (Snag/CWD Creation & Large Tree Release) is a proposal to create large, hard snags and CWD structure which is lacking in the project area and to release the largest trees with the fullest crowns in selected mid and late-seral stands.
- ✓ Project 4 (Large Woody Debris Placement) is a proposal to enhance approximately 5 miles of fish and aquatic habitat by the placement of conifer trees and logs into streams.
- ✓ Project 5 (Trout Creek County Road Culvert Replacement) is a proposal to replace two existing concrete culverts on Road 14-7-22 with an arched pipe culvert that would reduce sediment from entering a stream and eliminate a barrier to fish migration.
- ✓ Project 6 (South Mountain County Road Improvement) is a proposal to improve road drainage (installing ditches, water run-outs and culverts) and infrastructure (placement of approximately six inch lift of rock) to 3.5 miles of the South Mountain County Road, thereby reducing erosion run-off and improving water quality.

The actions would occur within Late-Successional Reserve (LSR) and Riparian Reserve (RR) Land Use Allocations (LUA).

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-07/002+1792

FINDING OF NO SIGNIFICANT IMPACT

Introduction

The Bureau of Land Management (BLM) has conducted an environmental analysis (Environmental Assessment Number OR080-06-18) for a proposal to implement six projects as follows.

- ✓ *Project 1*: Conduct density management on approximately 159 acres of 34 to 69 year-old stands in Late-Successional Reserve (LSR) and Riparian Reserve (RR) Land Use Allocations (LUAs) to increase structural diversity and reduce densities.
- ✓ *Project 2*: Conduct variable density management on 23 acres of a young (approximately 20 year old) stand to promote late-successional forest conditions and reduce densities.
- ✓ *Project 3*: Create snags and coarse woody debris (CWD) in mid and late-seral stands which are lacking these components and release the largest trees with the greatest live crowns within the same stands.
- ✓ *Project 4*: Place large woody debris (LWD) within Peak Creek and the South Fork Alsea River to enhance fish and aquatic habitat conditions.
- ✓ *Project 5*: Replace two existing concrete culverts on Road 14-7-22 with an arched pipe culvert that would reduce sediment from entering a stream and eliminate a barrier to fish migration.
- ✓ *Project 6*: Improve road drainage (installing ditches, water run-outs and culverts) and infrastructure (placement of approximately six inch lift of rock) to 3.5 miles of the South Mountain County Road, thereby reducing erosion run-off and improving water quality.

The projects are on BLM managed lands and private land (Rosboro Lumber Co. and Weyerhauser Co.) in Township 14 South, Range 7 West, Sections 13, 14, 15, 21, 23, 24, 25, 26 and 36 and Township 14 South, Range 6 West, Section 19, Willamette Meridian.

Implementation of the proposed action will conform to management actions and direction contained in the *Yamaha LSR Enhancement/Aquatic Habitat Restoration Environmental Assessment* (Yamaha LSR Enhancement/Aquatic Habitat Restoration EA). The Yamaha LSR Enhancement/Aquatic Habitat Restoration 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. 2). The Yamaha LSR Enhancement/Aquatic Habitat Restoration 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 lands within the Marys Peak Resource Area (EA pp. 2-3). Consultation with the U.S. Fish and Wildlife Service and National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) is described in Section 12.1 of the EA.

The EA and FONSI will be made available for public review at the Salem District office and on the internet at Salem BLM's website, http://www.blm.gov/or/districts/salem/index.htm (under Plans and Projects) from October 14, 2007 to November 13, 2007. The notice for public comment will be published in a legal notice by the *Gazette-Times* newspaper. Comments received by the Marys Peak Resource Area of the Salem District Office, 1717 Fabry Road SE, Salem, Oregon 97306, on or before November 13, 2007 will be considered in making the decisions for these projects.

Finding of No Significant Impact

Based upon review of the Yamaha LSR Enhancement/Aquatic Habitat Restoration EA and supporting documents, I have determined that the proposed actions are not major federal actions 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 Upper Alsea River 5th-field watershed and the project area boundaries. The proposed action would occur on approximately 159 acres of LSR and RR LUA land, encompassing less than 0.2 percent of the forest cover within the affected watershed [40 CFR 1508.27(a)].

Intensity:

1. The effects of commercial thinning are unlikely to a have significant adverse impacts on the affected elements of the environment [40 CFR 1508.27(b) (1)]. The affected elements common to all project areas are: hydrology (water quality, wetland/riparian zones, and other water resources), soils, wildlife (T/E, special status species, structural/habitat components), air quality and fire hazard/risk, botany (special status species, invasive/nonnative species), fisheries and aquatic habitat (T/E species), recreation and visual resources.

   Design features were incorporated into the Proposed Action for all project areas that would reduce the risk of adverse effects to the above resources (EA Sections 2.3, 4.3, 5.3, 6.3, 7.3 and 8.3). These design features are proposed in order to meet the following objectives:
   - To minimize soil productivity loss from soil compaction, slope stability or soil duff layer resulting from ground-based and skyline logging operations;
   - To protect other components of hydrologic functions (channels, flows, water quality);
   - To protect and enhance stand diversity and wildlife habitat components;
   - To protect against expansion of invasive and non-native plant species;
   - To protect the residual stand;
   - To minimize disturbance to federal threatened and endangered species;
   - To protect BLM special status plant and animal species;
   - To reduce potential hazards to high-use recreation and visual resource areas;
   - To reduce fire hazard risk and protect air quality;
   - To protect cultural resources.

   As a result of implementing the project design features described in EA Sections 2.3.2, 4.3, 5.3, 6.3, 7.3 and 8.3, potential effects to the affected resources from thinning activities and connected actions in all project areas are anticipated to be site-specific or not measurable (i.e. undetectable over the watershed, downstream, or outside of the project area) [40 CFR 1508.27(b) (1), - EA Sections 3.2, 4.6, 5.6, 6.6, 7.6, 8.6].

2. *Projects 1-6 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 1-6* 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 1-6* 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 1-6* 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 projects' scope (effects are likely to be too small to be detectable), scale (project area of 159 acres, encompassing less than 0.2percent of the forest cover within the Upper Alsea River Watershed), and duration (direct effects would occur over a maximum period of 4-6 years) (EA Section 9.0).

6. *Projects 1-6* 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:
   To address concerns for effects to federally listed wildlife species and potential degradation of critical habitats, the proposed action has been consulted upon with the U.S. Fish and Wildlife Service, as required under Section 7 of the ESA. Consultation for this proposed action was facilitated 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 2007 and 2008. The resulting Letter of Concurrence (ref# 1-7-06-I-0190, dated August 1, 2006) concurred with the BA, that this action was not likely to adversely affect spotted owl, marbled murrelets or their critical habitats. This proposed action has been designed to incorporate all appropriate design standards set forth in the Biological Assessment which form the basis for compliance with the Letter of Concurrence.

   Fish:
   Consultation with NOAA NMFS is required for all actions which 'may affect' ESA listed fish species and critical habitat. The area where the proposed actions are located has two major stream systems (South Fork Alsea River and Peak Creek). There are not any fish species listed as threatened or endangered under the Endangered Species Act (ESA), as amended, in the project area at this time.

Protection of Essential Fish Habitat (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 proposed Yamaha LSR Enhancement/Aquatic Habitat Restoration projects 1, 2, 3 and 6 are not expected to adversely affect EFH due to distance of all activities associated with the projects from occupied habitat. Consultation with NOAA NMFS on EFH is not required for these projects. Projects 4 and 5 may adversely affect EFH habitat. The proposed actions addressed under these projects would meet the Project Design Criteria established in the *Endangered Species Act Section 7 Formal Programmatic Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for Fish Habitat Restoration Activities in Oregon and Washington, CY2007-CY2012.* Adverse effects to Essential Fish Habitat and application of design features to minimize project affects are covered by this programmatic.

7. *Projects 1-6* 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 L Humbard — Gary Humbard, Team Lead — 10/15/07 — Date

Reviewed by: Dan Schreindorfer, Natural Resource Specialist — 10-15-07 — Date

Approved by: for Trish Wilson, Field Manager, Marys Peak Resource Area — 10-15-07 — Date

Glossary: Abbreviations, Acronyms, and Terms

ACS	Aquatic Conservation Strategy
Alternative	Proposed project (plan, option, choice)
Anadromous Fish	Species that migrate to oceans and return to freshwater to reproduce.
BLM	Bureau of Land Management
BMP	Best Management Practice(s) design features to minimize adverse environmental effects.
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 and FEMAT.
Density Management	Reduction and composition of trees in a stand for purposes other than timber production.
DBHOB	Diameter Breast Height Outside Bark
EA	Environmental Assessment. NEPA document that describes a federal action(s) and analyzes the effects to the public and other agencies and tribes.
ESA	Endangered Species Act. Federal le
FEIS	Final Environmental Impact Statement
FLPMA	Federal Land Policy Management Act
FONSI	Finding of No Significant Impact. NEPA document that describes why the proposed action within a EA would not significantly affect the quality of the human environment, individually or cumulatively.
Fuels	Any natural combustible material left on site that is available for burning (ie. logs, limbs, needles, vegetation)
Ground Base Yarding	Moving trees or logs by equipment operating on the surface of the ground 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 and delimb a tree 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.
Helicopter Yarding	Moving trees or logs by helicopter to a landing where they can be processed or loaded.
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
LSR	Late-Successional Reserve (a NWFP land use allocation) Lands that are to be protected or enhanced for the purpose of providing habitat for older forest related species.
LSRA	Late-Successional Reserve Assessment for Oregon Coast Province – Southern Portion. Interagency document which facilitates appropriate management activities to meet LSR objectives.

LUA	Land Use Allocation. Lands designated using objectives as described in the NWFP.
LWD	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
NEPA	National Environmental Policy Act (1969)
NMFS	National Marine Fisheries Service
NOAA	National Oceanic Atmospheric Administration. Federal agency which is responsible for the regulation of anadromous fisheries.
Non-native Plant	Any species that historically does not occur in a particular ecosystem or were introduced
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).
ODEQ	Oregon Department of Environmental Quality
ODFW	Oregon Department 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
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 work which generally includes removal of culverts, re-establishment of natural drainage patterns, and blocking.
Road Improvement	Road work which improves an existing road over its original standard.
Road Reconstruction	Road work done to restore a damaged or deteriorated road to a useable condition.
Road Renovation	Road work which restores an existing road to its original standard
ROD	Record of Decision
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 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 lands.
S&M FSEIS	Final Supplemental Environmental Impact Statement for Amendment to the Survey and Manage, Protection Buffer, and Other Mitigation Measures Standards and Guidelines (2000)
S&M ROD	Record of Decision and Standards and Guidelines for Amendment to the Survey and Manage, Protection Buffer, and Other Mitigation Measures Standards and Guidelines (2001).

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 standing tree lacking live needles or leaves
South Fork Alsea River National Back Country Byway	The BLM's Back Country Byway program designates special roads noted for their scenic attributes, solitude and recreational opportunities.
SPZ	Stream Protection Zone is a buffer along streams where no material will be removed and heavy machinery will not be allowed. The minimum distance is 50 feet.
SSSP ROD	Record of Decision to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines in Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl, 2004.
SSSP/SEIS	Supplemental Environmental Impact Statement to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines, 2004
Succession:	A predictable process of changes in structure and composition of plant and animal communities over time. Conditions of the prior plant communities that are favorable for eh establishment of the next stage. 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 which causes water to change conditions.
USDI	United States Department of the Interior
USEPA	United States Environmental Protection Agency
VRM	Visual Resource Management. Lands are classified from 1 to 4 based on visual quality ratings.
Yarding Corridors	Corridors cut through a stand of trees. Cables are strung in these corridors to transport logs from the woods to the landing.

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1.0 INTRODUCTION

1.1 Projects Covered in this EA

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

- Project 1, Late Successional Reserve (LSR) Enhancement, is a proposal to cut and remove a portion of the trees through a timber sale on approximately 159 acres of 34 to 69 year old stands within LSR and Riparian Reserve (RR) Land Use Allocations (LUAs).
- Project 2, Young Stand Enhancement, is a proposal to thin a young conifer plantation within LSR and RR to promote stand diversity, to provide more light to accelerate growth of selected conifers, and to promote species diversity.
- Project 3, Snag/Coarse Woody Debris (CWD) Creation & Large Tree Release, is a proposal to create large, hard snags and CWD structure within LSR and RR which is lacking in the project area and to release the largest live trees with the greatest crowns from adjacent tree competition.
- Project 4, Large Woody Debris (LWD) Placement, is a proposal to place conifer trees within RR to create log jams, deflector logs, and scour logs within stream channels.
- Project 5, Road 14-7-22 (Trout Creek County Road) Culvert Replacement, is a proposal to replace two existing concrete culverts on Road 14-7-22 with an arched pipe culvert that would reduce sediment from entering a stream and eliminate a barrier to fish migration.
- Project 6, South Mountain County Road Surface Improvement, is a proposal to improve road drainage and infrastructure (predominately located on Weyerhauser Company land) to approximately 3.5 miles of the South Mountain County Road, thereby reducing erosion run-off and improving water quality.

1.1.1 Relationship between Projects

Projects occur within the Upper Alsea River Watershed.

1.2 Project Area Locations

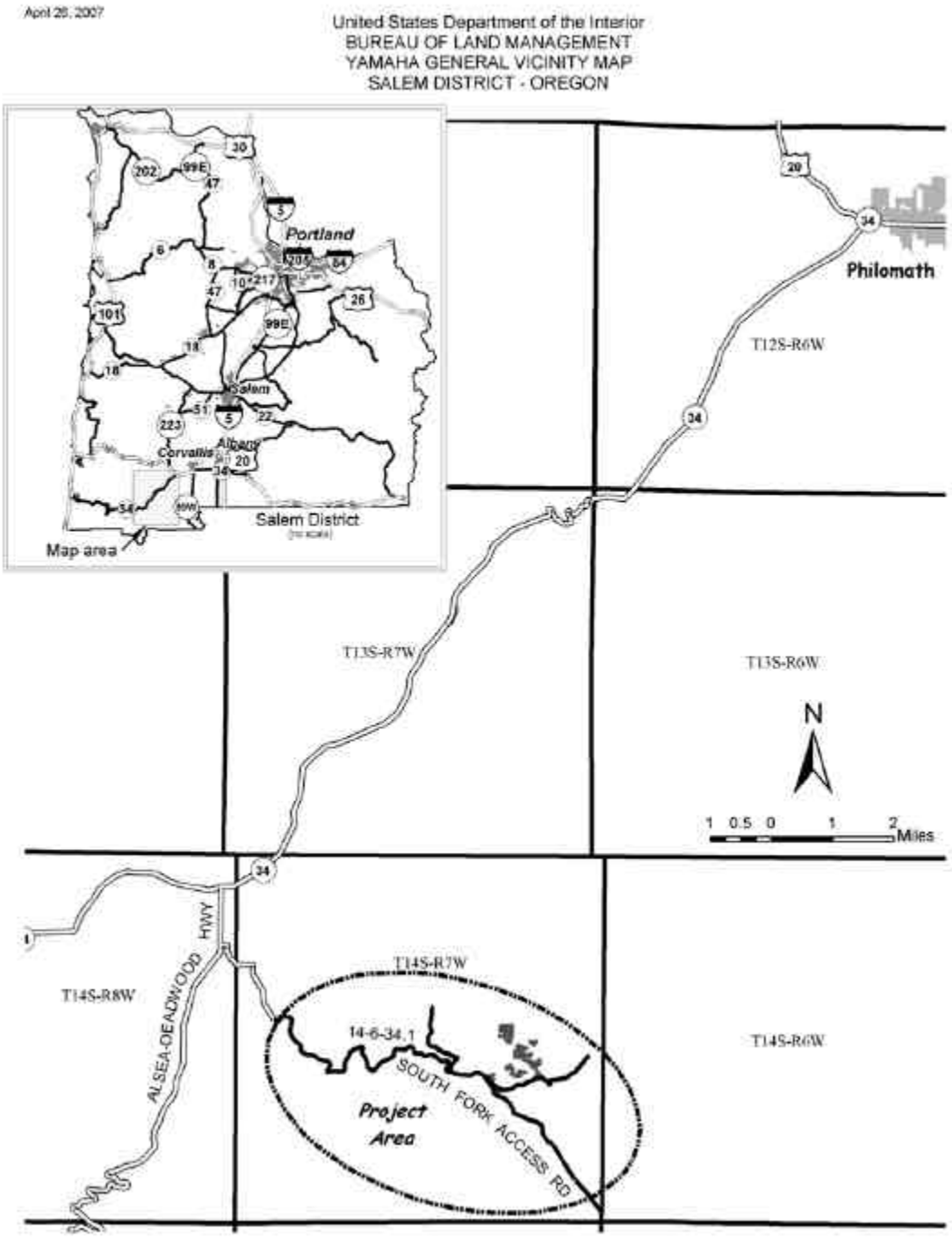
All projects are located less than six miles southeast of Alsea, Oregon, in Benton County on forested land managed by the Marys Peak Resource Area, Salem District of the Bureau of Land Management (BLM) and on private lands (Rosboro Lumber Company and Weyerhauser Company). They are within Township 14 South, Range 7 West, and Township 14 South, Range 6 West, Willamette Meridian (see Map 1).

Table 1: Project Area Locations

Project Area	*Township and Range (Willamette Meridian)*	*Sections*
LSR Enhancement (Project 1)	14 South, 7 West	14, 23
Young Stand Enhancement (Project 2)	14 South, 7 West	23
Snag/CWD Creation & Large Tree Release (Project 3)	14 South, 7 West	14, 23
Large Woody Debris (LWD) Placement (Project 4)	14 South, 6 West	19
	14 South, 7 West	21, 23-26 and 36

Project Area	*Township and Range (Willamette Meridian)*	*Sections*
Road 14-7-22 (Trout Creek County Road) Culvert Replacement (Project 5)	14 South, 7 West	15
South Mountain County Road Surface Improvement (Project 6)	14 South, 7 West	13, 14, 15 and 24

Map 1: Location Map



1.3 Conformance with Land Use Plans, Policies, and Programs

The Yamaha LSR Enhancement/Aquatic Habitat Restoration 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: 1/ *Salem District Record of Decision and Resource Management Plan* (RMP), May 1995: The RMP has been reviewed and it has been determined that the Yamaha LSR Enhancement/Aquatic Habitat Restoration projects conform to the land use plan terms and conditions (i.e., complies with management goals, objectives, direction, standards and guidelines) as required by 43 CFR 1610.5 (BLM Handbook H1790-1). Implementing the RMP is the reason for doing these projects (RMP p.1-3); 2/ *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* (the Northwest Forest Plan, or NWFP), April 1994.

The Yamaha LSR Enhancement/Aquatic Habitat Restoration Projects 1, 2, 4, 5 and 6 have been designed to conform to the following documents: *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 and *Supplemental Environmental Impact Statement to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines*, (SSSP/SEIS) January 2004.

The Yamaha LSR Enhancement/Aquatic Habitat Restoration Project 3 has been designed to conform to the following documents: *Record of Decision and Standards and Guidelines for Amendment to the Survey & Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines* (S&M ROD), January 2001 and *Final Supplemental Environmental Impact Statement For Amendment to the Survey & Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines* (S&M FSEIS) November 2000.

The analysis in the Yamaha LSR Enhancement/Aquatic Habitat Restoration EA is site-specific and supplements analyses found in the *Salem District Proposed Resource Management Plan/Final Environmental Impact Statement* (RMP/FEIS), September 1994. 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* (NWFP/FSEIS), February 1994.

The proposed actions are 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 Yamaha LSR Enhancement/Aquatic Habitat Restoration projects: 1/ *Late-Successional Reserve Assessment Oregon Coast Province- Southern Portion* (LSRA, see USDA-FS and USDI-BLM 1997); 2/ *South Fork Alsea River Watershed Analysis* (SFAWA), USDI BLM, 1995 and 3/ Lower Alsea Watershed Analysis (LAWA), USDI BLM 1999. These documents are available for review in the Salem District Office. Additional information about the proposed projects is available in the

Yamaha LSR Enhancement/Aquatic Habitat Restoration Project EA Analysis File (NEPA file), also available at the Salem District Office.

Survey and Manage Review

The Bureau of Land Management (BLM) 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. Subsequently in that case, on January 9, 2006, the court ordered:

- 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
- reinstate 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 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 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, 2, 4, 5 and 6 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."

The Bureau of Land Management has reexamined the objectives of Yamaha LSR Enhancement/Aquatic Habitat Restoration Projects 1, 2, 4, 5 and 6 as described in the Yamaha LSR Enhancement/Aquatic Habitat Restoration EA. Projects 1 and 2 consist of thinning 20 to 70 year old stands within LSR and RR LUAs. Therefore, Yamaha LSR Enhancement/Aquatic Habitat Restoration Projects 1 and 2 meet exemption a. above. Project 4 consists of stream improvement work through the placement of large wood. Therefore, Yamaha LSR Enhancement/Aquatic Habitat Restoration Project 4 meets exemption c. above. Projects 5 and 6 consists of replacing culverts and improving existing roads that are in use and part of the road system. Yamaha LSR Enhancement/Aquatic Habitat Restoration Projects 5 and 6 meets exemption b. above. Accordingly, the decision to eliminate survey and manage is effective on these projects.

"On July 25, 2007, the Under Secretary of the Department of Interior signed a new Survey and Manage Record of Decision Record (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) 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, Projects 1, 2, 4, 5 and 6 fall within at least one of the exceptions listed in the modified October 11, 2006 injunction."

In addition, Project 3 is designed to be consistent with the 2001 Survey and Manage ROD as modified by subsequent annual species reviews as allowed by the modified October 11, 2006 injunction.. We do not expect that the litigation over the ASR process in Klamath-Siskiyou Wildlands Center et al. v. Boody et al. will affect Project 3, because the development and design of this project complies with the Northwest Forest Plan prior to the ASR process. Therefore, the Yamaha Project 3 is neither altered by changes made through the ASR process or the 2004 decision to eliminate the Survey and Manage program. In accordance with the 2001 ROD, the Marys Peak Resource Area Field Office conducted surveys. It also provided management prescriptions implementing the applicable protocols sm and management recommendations for Survey & Manage species whose range is in the project area. Information regarding effects of the project on "Survey & Manage" species has been incorporated in the EA.

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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-Fisheries) 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. Section 10.0 of the EA shows how the Yamaha LSR Enhancement/Aquatic Habitat Restoration Projects meet the Aquatic Conservation Strategy in the context of PCFFA IV and PCFFA II.

1.4 Decision Criteria/Project Objectives for Each Project

The Marys Peak Resource Area 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 sections 2.1, 4.1, 5.1, 6.1, 7.1 and 8.1)
- 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 April 12, 2006, was sent to 29 potentially affected or interested individuals, groups, and agencies. One response was received during the scoping period.

Oregon Wild

Oregon Wild provided the following statements or requests:

- *We urge you to explore practices of variable density thinning for all stands to be treated, which allows young stands to develop into more complex and resilient forests.*
- *ONRC generally does not support new road construction in reserves. We feel that temporary road construction is more appropriate than permanent road construction.*
- *BLM should consider whether some material from the Young Stand Management project can be sold.*
- *Management activities should include creation of snags and down wood. We would be supportive of removal of some of the trees older than 80 years if doing so would increase the diversity and health of the forest stand, and if the trees are used as down wood in deficient stands in other areas of the Yamaha project or as large wood for in stream restoration projects.*
- *BLM should use the DecAID decision support tool and conserve all the many values of snags and down wood.*
- *The number and priority of culvert replacement should be based on a cost-benefit analysis.*
- *Special status species surveys must be completed prior to developing NEPA alternatives and before the decision is determined.*
- *Project analysis should separately discuss each of the Aquatic Conservation Strategy objectives.*
- *A full range of action alternatives should be considered for this project.*

2.0 Project 1 Late Successional Reserve Enhancement

2.1 Purpose of and Need for Action

The BLM proposes forest management activities on approximately 159 acres. These activities may include timber harvest, road construction 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. 2).
  - ✓ 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 some 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.

Existing roads within the project area contain culverts that are beyond their functional time span with rusted worn-out bottoms. The roads lack an adequate amount of rock to prevent environmental degradation during timber haul use.

There is a need to:

- Reduce stand densities using variable spacing methods.
- Create immediate terrestrial coarse woody debris.
- Construct and decommission immediately after harvest operations, approximately 1,700 feet of new ridgetop road.

- Apply rock and replace approximately 28 ditch relief or stream crossings culverts within existing roads.
- 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 March 2008.

2.2 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.

2.3 Proposed Action

This project consists of density management treatments on approximately 159 acres of 34 to 69 year old stands within LSR and RR LUAs and would occur through a timber sale (Yamaha LSR Enhancement). Approximately 159 acres would be thinned to a variable density (basal area ranging from 90 to 190 square feet/acre). Approximately 21 percent of the overall stand area would have gaps (approximately 0.25 acre gaps) created around approximately one large tree per acre in the mid-seral stands to be treated to enhance their existing crowns . Within these gaps, one large tree (24-36 inches DBHOB) would be topped for snag creation, and a second large tree would be felled and left on site as CWD. Trees would be skyline yarded on approximately 98 acres and ground based yarded on approximately 62 acres.

2.3.1 Connected Actions

1. **Road Work**:

- **Road Construction:** Approximately 1,700 feet of new road (predominantly near ridge top locations) would be constructed. Roads P1 and P2 would be surfaced with road surface rock. Following harvest, the new construction would be decommissioned by water barring, grass seeding and blocking to all vehicular traffic.
- **Existing Skid Trail:** Approximately 300 feet of Road 14-7-23.3 would be used as a skid trail. To minimize disturbance to a perennial stream crossing, minor improvements would be made by replacing an existing failing log drainage structure with a culvert. Immediately upon completion of ground based yarding operations of Unit 23D, the temporary culvert would be removed (prior to the upcoming winter season) and the road would be decommissioned by barricading the road and grass seeding exposed areas of soil. Ground based yarding and log truck traffic would occur within the road right-of-way.
- **Road Renovation:** Within existing roads, rock application may occur and culvert replacement would occur on approximately 28 ditch relief or stream crossings. Cut and fill slopes adjacent to culvert replacements would be grass seeded and large rock would be placed as needed. New culverts installed would meet 100 year flood design criteria. The South Mountain County Road would be renovated (graded, brushed) and blocked to vehicle traffic following harvest operations until such time as Project 6 is implemented. This would provide adequate access to Unit 23D and reduce environmental degradation.

2. **Fuel Treatments:** Fuel treatment strategies would be implemented on portions of the project areas. 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. In order to reduce fire risk, the area would be monitored for the need to close or restrict access during periods of high fire danger. During the closed fire season the first year following harvest activities, the entire area would be posted and closed to all off road motor vehicle use.

3. **Skid Trail Construction:** Existing skid trails would be utilized as much as possible and new skid trail construction would be avoided where possible. New skid trail construction would follow the project design features described in Section 2.3.2. Skid trails would not be permitted off the 14-6-34.1 road. Some main skid trails may be used as haul roads depending on harvest equipment used. This type of haul road would be restricted to the maximum width of 15 feet.

4. **Blocking Skid Trails:** Skid trails would be waterbarred and grass seeded after completion of operations and where determined to be necessary by the authorized officer. This would mitigate soil erosion, discourage potential increase of Off-Highway Vehicle (OHV) usage, reduce noxious weed infestations and help accelerate the return of native vegetation.

5. **Additional CWD Creation:** Additional inputs of CWD would be achieved by indirect harvest activities (e.g. breakage, limbs and tops, trees felled but not harvested), post-harvest wind throw and bark beetle kill in response to new accumulations of slash and wind throw. Three to five years after harvest, CWD would be evaluated and a decision made as to whether more is needed.

2.3.2 Project Design Features

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

General

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).

Table 2: 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 (cable)	Protecting the bark and cambium of residual trees
During periods of low precipitation, generally May 1-October 31	Road construction/renovation	Minimize soil erosion
During periods of low soil moisture, generally July 15-October 15	Ground based yarding (Tractor)	Minimize soil erosion/compaction
During periods of low soil moisture, generally June 15-October 31	Ground based yarding (Harvester/Forwarder)	Minimize soil erosion/compaction

July 1 - August 31	In-stream work period (stream crossing culvert installation or removal)	Minimize soil erosion/stream sedimentation
During periods of dry weather and low soil moisture, generally May1-October 31	Timber hauling on the following road: South Mountain County Road.	Minimize soil erosion/ stream sedimentation
During periods of dry weather and low soil moisture, generally May1-October 31	Timber hauling on the following roads: Road 14-7-23 from the jct. of Rd. 14-7-23.3.2 to its termination of road renovation and Road 14-7-23.1	Minimize soil erosion/ stream sedimentation
Generally year round	Timber hauling would be allowed year-round on rock surfaced roads except during periods of rainfall when water is flowing off of road surfaces.	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.
- 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 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 and utilize existing skid trails as much as practical. 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 they should be required to operate on top of slash as much as practical and utilize pre-designated "skid roads" spaced an average of 150 feet apart or more and be 10 feet or less in width. Utilize existing old skid trails as much as is practical.would require utilization of pre-designated skid trails spaced at least 150 feet apart where they intersect boundaries and utilize existing skid trails as much as practical.
- Waterbars would be constructed where they are determined to be necessary by the Authorized officer.
- In the skyline yarding area, one end suspension of logs would be required over as much of the area 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.
- During periods of rainfall when water is flowing off road surfaces, the authorized officer may restrict log hauling to minimize water quality impacts, or require the purchaser to install silt fences, barkbags or apply additional road surface rock.
- All locations where mineral soil is exposed (roads to be constructed, skid trails and landings, culvert replacements) would be sown with Oregon Certified (blue tagged) red fescue (*Festuca*

rubra), or sown with a wildlife vegetation mix applied at a rate equal to 40 pounds per acre or sown/planted with other native species as approved by the resource area botanist.

- Dispose of slide and waste material in stable, non-floodplain sites approved by a geotechnical engineer or other qualified personnel. Use stable sites beyond floodplain within riparian areas only if an interdisciplinary process has identified the area as stable and not susceptible to delivery to the adjacent stream. Provide erosion control to minimize sediment delivery to streams.
- Minimize disturbance of existing vegetation in ditches and at stream crossings to the greatest extent possible.
- Minimize soil disturbance and displacement, but where sediment risks warrant, prevent off-site soil movement through use of filter materials (such as straw bales or silt fencing) if vegetation strips are not available.
- Implement soil-disturbing maintenance activities during dry conditions to the greatest extent practical (seep and cross drain culvert installations).
- Refuel power equipment, use absorbent pads for immobile equipment, and prepare concrete at least 150 feet (or as far as possible from the water body where local site conditions do not allow a 150 foot setback from water bodies) to prevent direct delivery of contaminants into associated water bodies.

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

- Stream protection zones (SPZs) where no cutting is permitted, would be established along all streams and identified wet areas within the harvest area. 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 area.

To protect and enhance stand diversity and wildlife habitat components:

- Priorities for tree marking would be based on Marking Guidelines (see Appendix 3).
- Approximately 150 gaps would be created within the density management areas by cutting most trees within 60 feet of one large live tree. Within these gaps one larger tree (24-36 inches DBHOB) would be topped for snag creation, and a second large tree would be left on the ground as CWD. The gaps would be approximately 0.25 acre in size and would not be located within 100 feet of streams.
- Within the density management areas any green trees intended to be part of the residual stand that are incidentally felled to facilitate access and operability (yarding corridors, hang-ups, tailholds) would be treated as follows:
  - ✓ Trees that are 36 inches Diameter Breast Height Outside Bark (DBHOB) or greater would be retained on site.
  - ✓ Trees less than 36 inches DBHOB would be available for removal.
- 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.
- All 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 snags and additional trees would be cut around seedlings and understory trees in order to increase spacing variability. The number of additional reserved trees would be approximately equal to the number of additional cut trees, thereby maintaining the prescribed trees per acre described in EA Analysis File (see NEPA file).
- Any tree found to have a stick or ball nest, regardless of size (tree or nest) would be protected.
- All trees and snags within Project 3 Area and within skyline yarding corridors that are necessary to accomplish the yarding of Unit 23B, would be cut and left on site.

To reduce fire hazard risk and protect air quality:

- Light accumulations of debris cleared during road construction 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 landings and along existing roads that remain in drivable condition would be machine piled. Within 30 feet of the edge of each landing and road, all logs, tops, and debris would be decked or windrowed as directed by the authorized officer (except for logs sold and removed from the project area). Large accumulations of debris within 100 feet of the South Fork Alsea River National Back Country Byway (Road 14-6-34.1) would be moved to an alternate location for burning.
- All piles would be located at least ten feet away from reserve trees and snags. Larger piles would be preferable over small piles. Wind rows would be avoided unless approved in advance by the Authorized officer.
- During the late summer before the onset of fall rains, all machine and hand piles to be burned, would be covered at least 80percent 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 and Animals:

- On Projects 1, 2, 4 and 6, 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 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).*
- On Project 3, Site management of Survey and Manage Species would be accomplished in accordance with the *Record of Decision and Standards and Guidelines for Amendment to the Survey & Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines* (S&M ROD, January 2001) and the *Final Supplemental Environmental Impact Statement For Amendment to the Survey & Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines* (S&M FSEIS, November 2000, pages 8-14).
- The resource area biologist or botanist would be notified if any Threatened and Endangered and Bureau Special Status Plants and Animal species are found occupying stands proposed for treatment during project activities. All of the known sites would be withdrawn from any timber harvesting activity.

To Protect Recreation and Visual Resources:

- Large accumulations of debris/slash created by logging activities within 100 feet of the South Fork Alsea Access Road (Rd. 14-6-34.1) would be moved to an alternate location for burning.
- A greater amount of live trees within 100 feet of the South Fork Alsea Access Road (VRM 2 area) would be left.
- Skid trails would not be located adjacent to the South Fork Alsea Access Road.

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.

2.4 Alternative 1 (No Action)

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

Table 3: Summary Comparison of Project Activities for Alternatives 1 and 2

Activity	Alternative 1 (No Action)	Alternative 2 (Proposed Action)
Ground based yarding (acres)	0	62
Skyline yarding (acres)	0	118
Road construction (feet)	0	1,700
Road renovation (feet)	0	5000
Road renovation (culverts to be replaced)	0	28
Density management harvest (acres)	0	159

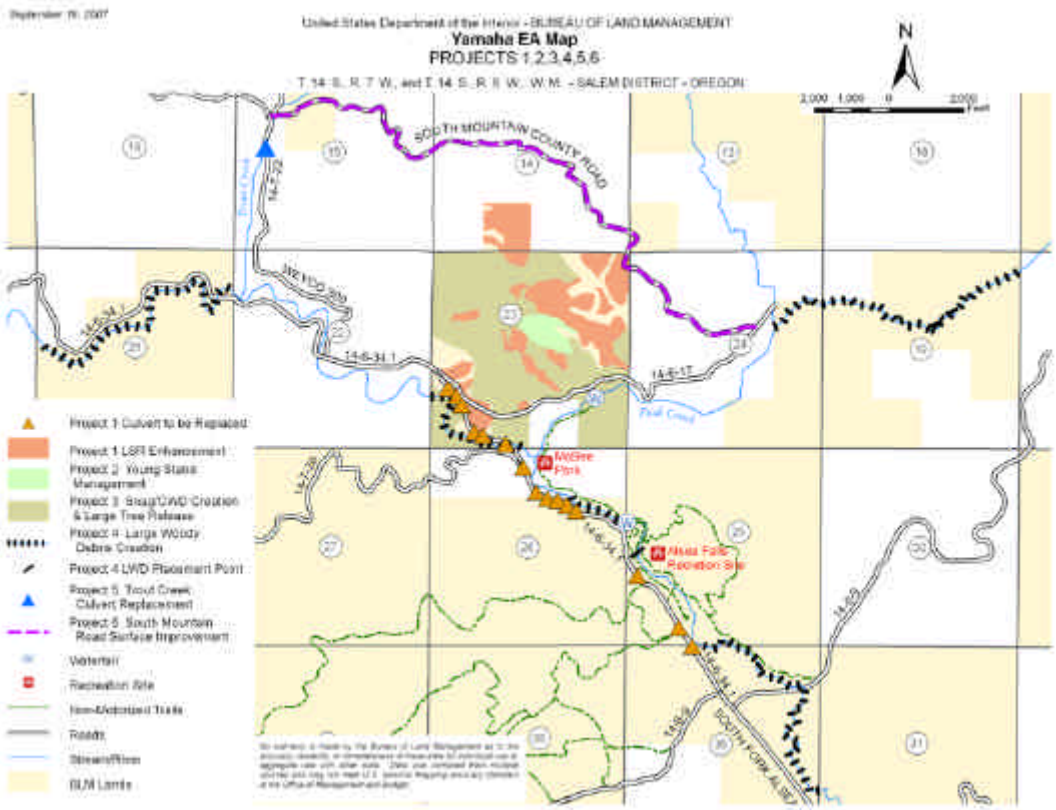
2.5 PROJECT 1: COMPARISON OF ALTERNATIVES WITH REGARD TO PURPOSE AND NEED

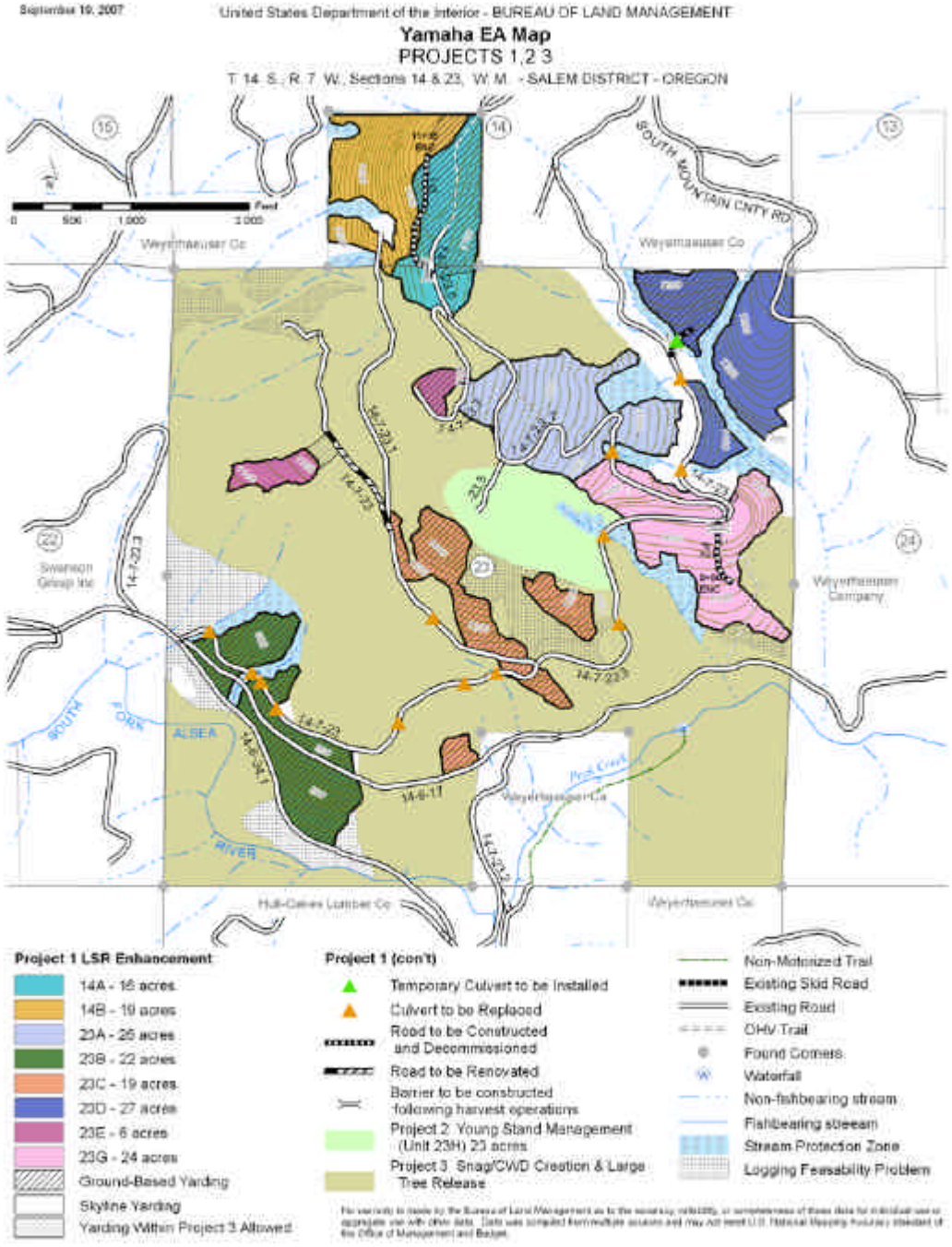
Table 4: Comparison of Alternatives by Purpose and Need

Purpose and Need (EA Section 2.1)	No Action (Alternative 1)	Proposed Action (Alternative 2)
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 area.	Creates patch openings with adjacent clumps of trees. Increases the quality and value of wildlife habitat.
Offer a marketable timber management sale.	Does not meet this purpose and need. Would not offer timber for sale.	Offers approximately 5000 MBF of timber for sale.
Increase structural diversity in	Does not meet purpose and	Reduces tree densities

relatively uniform conifer stands.	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.	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.
Provides 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. Delay maintenance on feeder roads, main routes would be maintained.	Constructs 1700 feet of new roads and renovates 300 feet. Following harvest, the new construction and renovation would be decommissioned. Would implement maintenance on feeder roads, allowing for continued access.
Reduces environmental effects associated with existing roads within the project area	No change. Maintain existing drainage and road surface conditions.	Renovates existing roads (includes drainage structure renovation or replacement on approximately 28 cross drains or stream crossings). These renovations would improve drainage and road surface conditions, resulting in less road surface erosion into the streams.

EA Maps: Maps of the Proposed Action




September 19, 2007
United States Department of the Interior - BUREAU OF LAND MANAGEMENT
Yamaha EA Map
PROJECTS 1,2 3
T. 14 S., R. 7 W., Sections 14 & 23, W.M. - SALEM DISTRICT - OREGON
SOUTH MOUNTAIN CNTY RD
Weyerhaeuser Co
Swanson Group Inc
Weyerhaeuser Company
Hull-Oakes Lumber Co
ALSEA
SOUTH FORK
RIVER
Project 1 LSR Enhancement
14A - 16 acres
14B - 19 acres
23A - 26 acres
23B - 22 acres
23C - 19 acres
23D - 27 acres
23E - 6 acres
23G - 24 acres
Ground-Based Yarding
Skyline Yarding
Yarding Within Project 3 Allowed
Project 1 (con't)
Temporary Culvert to be Installed
Culvert to be Replaced
Road to be Constructed and Decommissioned
Road to be Renovated
Barrier to be constructed following harvest operations
Project 2 Young Stand Management (Unit 23H) 23 acres
Project 3 Snag/CWD Creation & Large Tree Release
Non-Motorized Trail
Existing Skid Road
Existing Road
OHV Trail
Found Corners
Waterfall
Non-fishbearing stream
Fishbearing stream
Stream Protection Zone
Logging Feasability Problem

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL EFFECTS– COMMON TO ALL 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 5 Critical Elements of the Human Environment and Table 6 Other Elements of the Environment summarize the results of that review. Affected elements are **bold**. All entries apply to the proposed action, unless otherwise noted.

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

"Critical Elements Of The Human Environment"	Status: (i.e., Not Present , Not Affected, or Affected)	Do these projects contribute to cumulative effects? Yes/No	Remarks
Air Quality (Clean Air Act)	**Affected**	**Addressed in text EA Section 9.6**	**Addressed in text (EA Sections 3.2.6, 4.6.6, 7.6.6, 8.6.6 & Yamaha LSR Enhancement Project Proposal Fuels Report pp. 1-10)**
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 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 10percent.
Energy (Executive Order 13212)	Not Affected	No	There are no known energy resources located in the project areas. The proposed action would have no effect on energy development, production, supply or distribution.
Environmental Justice (Executive Order 12898)	Not Affected	No	The proposed action is not anticipated to have disproportionately high or adverse human health or environmental effects on minority populations or low-income populations.
Prime or Unique Farm Lands	Not Present	No	
Flood Plains (Executive Order 11988)	**Affected**	**Addressed in text EA Section 9.3**	**Addressed in text (EA Sections 6.6.3, 7.6.3, & Hydrology/Channels/Water Quality Addendum for Yamaha Project pp.1-16).**
Hazardous or Solid Wastes	Not Present	No	
Invasive, Nonnative Species (plants) (Executive Order 13112)	**Affected**	**Addressed in text EA Section 9.1**	**Addressed in text (EA Sections 3.2.1, 4.6.1, 5.6.1, 6.6.1, 7.6.1, 8.6.1 & Botanical Report Yamaha pp. 1-12).**
Native American Religious Concerns	Not Affected	No	No Native American religious concerns were identified during the public scoping period.

"Critical Elements Of The Human Environment"		Status: (i.e., Not Present , Not Affected, or Affected)	Do these projects contribute to cumulative effects? Yes/No	Remarks
Threatened or Endangered (T/E) Species or Habitat	Fish	Not Present	No	
	Plant	Not Present	No	
	Wildlife (including designated Critical Habitat)	**Affected**	**Addressed in text EA Section 9.5**	**Addressed in text (EA Sections 3.2.5, 4.6.5, 5.6.5, 6.6.5, 7.6.5, 8.6.5 & Biological Evaluation pp. 1-11).**
Water Quality (Surface and Ground)		**Affected**	**Addressed in text EA Section 9.3**	**Addressed in text (EA Sections 3.2.3, 4.6.3 5.6.3, 6.6.3, 7.6.3, 8.6.3 & Hydrology/Channels/Water Quality Addendum for Yamaha Project pp.1-16).**
Wetlands (Executive Order 11990)		Not Affected	No	Wetlands would be designated as SPZs and buffered out of the treatment areas. (Yamaha Project Silvicultural Prescription: Including Upland and Riparian Reserves in NEPA file).
Wild and Scenic Rivers		Not Present	No	
Wilderness		Not Present	No	

Table 6: Review of Other Elements of the Environment for All Projects

Other Elements of the Environment	Status: (i.e., Not Present , Not Affected, or Affected)	Do these projects contribute to cumulative effects? Yes/No	Remarks If not affected, why?
Fire Hazard/Risk	**Affected**	**Addressed in text EA Section 9.6**	**Addressed in text (EA Sections 3.2.6, 4.6.6, 7.6.6, 8.6.6 & Fuels Report Summary Yamaha LSR Enhancement Project Proposal Fuels Report pp. 1-10).**
Other Fish Species with Bureau Status and Essential Fish Habitat	**Affected**	**Addressed in text EA Section 9.4**	**Addressed in text (EA Sections 3.2.4, 4.6.4, 5.6.4, 6.6.4, 7.6.4, 8.6.4 and Yamaha Fisheries Report pp. 1-20).**
Land Uses (right-of-ways, permits, etc)	Not Present	No	
Late Successional and Old Growth Habitat	Not Present	No	
Mineral Resources	Not Present	No	
Recreation	**Affected**	**Addressed in text EA Section 9.7**	**Addressed in text (EA Sections 3.2.7, 4.6.7, 5.6.7, 6.6.7, 7.6.7, 8.6.7 & Recreation/Rural Interface/VRM Report pp. 1-9).**

Other Elements of the Environment		Status: (i.e., Not Present , Not Affected, or Affected)	Do these projects contribute to cumulative effects? Yes/No	Remarks If not affected, why?
Rural Interface Areas		Not Affected	No	Although none of the projects are in rural interface zones according to the RMP, logging and other operational traffic would pass through rural interface areas. Smoke and noise accompanying the projects would not be significant issues.
Soils		**Affected**	**Addressed in text EA Section 9.2**	**Addressed in text (EA Sections 3.2.2, 4.6.2, 5.6.2, 6.6.2, 7.6.2, 8.6.2 & Soils Environmental Assessment for the Proposed Yamaha Projects Report pp.1-15).**
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 Special Status botanical or fungal species known from within the project area. The project area would be surveyed prior to any ground disturbing activity. If any sites are located they would be protected.
	Wildlife	Not Affected	No	There are no known sites of any bureau special status species nor is there any likely habitat for such species within the proposed project areas. Red tree vole surveys required within Project 3 late-seral stands only.
Visual Resources		**Affected**	**Addressed in text EA Section 9.7**	**Addressed in text (EA Sections 3.2.7, 4.6.7, 5.6.7, 6.6.7, 7.6.7, 8.6.7 & Recreation/Rural Interface/VRM Report pp. 1-9).**
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 9.3**	**Addressed in text (EA Sections 3.2.3, 4.6.3 5.6.3, 6.6.3, 7.6.3, 8.6.3 & Hydrology/Channels/Water Quality Addendum for Yamaha Project pp.1-16).**
Wildlife Structural or Habitat Components - Other (Snags/CWD/ Special Habitats, road densities)		**Affected**	**Addressed in text EA Section 9.5**	**Addressed in text (EA Sections 3.2.5, 4.6.5, 5.6.5, 6.6.5, 7.6.5, 8.6.5 & Biological Evaluation pp. 1-11).**

3.2 Affected Environment and Environmental Effects

Those elements of the human environment that were determined to be affected are *vegetation, soils, water, fisheries/aquatic habitat, wildlife, fuels/air quality and recreation/visual resources.* This section describes the current condition and trend of those affected elements, and the environmental effects of the alternatives on those elements (Section 3.1).

3.2.1 Vegetation

(IDT Reports incorporated by reference: Yamaha Project Botanical Report pp. 1-12, Yamaha Silvicultural Prescription and Riparian Report pp. 1-25)

Affected Environment

Structure/Species Composition

The proposed project stands were regeneration harvested between 1940 and 1973. Since 1973, there has been management on four of the nine units to be treated. Stands 14A, 23A and 23G have been commercially thinned and 23E was salvaged harvested. Stands 14B, 23B and 23C have not been treated since the last final harvest.

The overall project area is a mixture of late and mid seral stands with one early-seral stand. The mid-seral stands to be treated have a single layer canopy. Stand ages range from 34 to 69 years of age and the primary species is Douglas-fir with a few scattered hardwoods and other conifers. All stands are dense with relative density in excess of 70 percent (see Table 7). The average crown ratio for these stands is 29 percent. The primary ground cover is moss. The primary shrub species is salal.

Table 7 Stand Conditions

Unit	Age	Trees/acre [1]	Basal Area	QMD[4] DBH	Relative Density[2]	Mean Crown Ratio[3]
14A	69	DF 129	269	QMD: 19.5	.73	.30
14B	34	DF 305 Hdwd 47 Total 352	240	QMD: 11.2	.81	.28
23A	69	DF 129	269	QMD: 19.5	.73	.30
23B	43	DF 235 WH 3 GF 7 Total 245	265	QMD: 14.1	.82	.29
23C	53	DF 265 Hdwd 21 Total 286	313	QMD (DF only): 14.7	.95	.23
23D	29	DF 275 GF 7 Total 282	244	QMD: 12.6	.78	.38

Unit	Age	Trees/acre [1]	Basal Area	QMD[4] DBH	Relative Density[2]	Mean Crown Ratio[3]
23E	58	DF 120 GF 9 Total 129	264	QMD: 19.4	.71	.27
23G	69	DF 129	269	QMD: 19.5	.73	.30
23H	21	DF 358 WH 9.2 Total 367.2	127.5	QMD: 8.0	0.491	0.725

1. From stand exams performed in 2005 and 2006. Residual trees > 40inches are not included.
2. Relative Density (RD) is a measure of stand density: generally 0.35 indicates full site occupancy (beginning of competition) and 0.6 indicates mortality due to competition.
3. Mean Crown Ratio is a ratio of live crown to total tree height. The larger the number, the deeper the crown.
4. QMD- Quadratic Mean Diameter- The DBH of the tree of mean basal area in a stand.

Coarse woody debris levels are low. Only two stands have any Class 1 and 2 logs greater than 20 inches DBHOB. There is an average of seven snags greater than 10 inches DBHOB and 10 feet in height per acre. See Table 8 for the CWD volume and number of snags present on the proposed treatment stands.

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

Other than small isolated pockets of *phellinus* (root disease), there are no substantial diseases in these stands. The high average relative density is an indication of a need to reduce the number of stems per acre for better forest health. Within the Riparian Reserves, stands would be thinned except for the SPZs along streams.

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
Inventory of the project area for federal and Oregon state threatened and endangered and bureau special status 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 special status vascular plant, lichen, bryophyte, or fungi species within Project 1 area, nor were any found during subsequent surveys.

Invasive/Non-native Plant Species (including Noxious Weeds):
The following noxious weeds are known to be present within or adjacent to the project area: Tansy ragwort (*Senecio jacobaea*), bull and Canadian thistles (*Cirsium vulgare* and *C. arvense*), St. John's wort (*Hypericum perforatum*), Himalayan blackberry (*Rubus procerus*), and Scot's broom (*Cytisus scoparius*)

Environmental Effects

3.2.1.1 Alternative 1 (No Action)

Trees would continue at their present rate of growth, slowing as the canopy closes and competition for light increases. Crown ratios would decrease at a faster rate compared to Alternative 2.

The canopy would remain closed, allowing little light to penetrate to the ground. No substantial understory would develop within the next 20 years and beyond without density management. Natural disturbances such as wind, disease and insect infestations would create stand structural diversity.

Eventually, dominant trees would shade out and kill suppressed and co-dominant trees. Asopenings in the canopy are created, additional sunlight would be available to the understory, shrubs and forbs. Additional openings may increase the number and diversity of botanical and fungal species in the area. Openings may become dominated by shrubs or ferns. It is unknown how long it would take for natural disturbances to create the structural and species diversity needed in this watershed; but based on experience and a considerable body of research, this diversity would take longer to develop than if the proposed treatment were implemented.

There would be no human caused disturbance and consequently no microclimate changes in the Riparian Reserves. There would be no short-term elevated risk of bark beetle infestation. However, as stand health is compromised due to high densities, risk of long-term bark beetle infestation is increased, especially during extended periods of drought. Stand mortality due to competition would increase, creating increased amounts of small CWD, snags and in-stream LWD.

Wind firmness and individual tree stability would decrease as crown ratios decrease. Risk of catastrophic consequences due to wildfire may increase. Densely stocked stands with consequently large numbers of small snags and CWD burn more readily and are more subject to crown fires than stands growing at lower densities.

Invasive/Non-native Plant Species (including Noxious Weeds): Without the implementation of the proposed project there would be no human caused disturbances. In the proposed project area, the established noxious weed populations would remain low as compared to Alternative 2. Weed populations may increase in areas where erosion is not controlled.

3.2.1.2 Alternative 2 (Proposed Action)

Development of stand structure and individual tree characteristics desirable for attainment of composition and structural diversity objectives in the LSRA and the ACS Strategy would be accelerated in the following ways:

- ✓ Trees would be removed in a variable spacing, which would create openings for understory tree and shrub development, and provide areas of higher density. This would provide habitat for a wider variety of shrub and tree species than a dense uniform stand. The proposed action would increase the amount of light penetrating the canopy and promote growth and development of vegetation found at mid-canopy and ground levels. In the short-term a more complex understory would develop consisting of more shrub species. Understory initiation of shade tolerant conifers associated with canopy layering would be promoted in areas of increased light over the long-term. In addition to the variable density treatment, variability would also be increased by limiting the variable density treatment areas to approximately 20 acres.

- ✓ Residual trees would increase in diameter and crown depth/width. Limb diameter on large limby trees would be maintained by releasing those trees to an open grown condition. The long-term results of density management would be larger average DBHOB and deeper crowns (higher crown ratios) at any given age, compared to the No Action Alternative.

- ✓ The proportion of minor conifer species would be increased by targeting Douglas-fir as the primary species to remove and reserving minor species and hardwoods where possible.

- ✓ Trees grown in more open conditions become more wind firm than those in very dense stands. Average crown ratios of the treated mid-seral stands immediately after density management would increase by approximately 35percent. After 20 years, stand crown ratios would still be above 29percent whereas the untreated stands would be under 21percent.

There would be a short-term (one to three years) elevated risk of a bark beetle infestation from the increased fresh down wood, resulting from the logging operation and creation of additional snags and down wood subsequent to the proposed treatment. In the unlikely event of a large infestation of these beetles, some reserved Douglas-fir trees may be killed in the following 1 to 5 years. Subsequent infestations are not likely after approximately five years. Removal of logs in excess of CWD needs would reduce the effect of bark beetle infestation.

The newly thinned conifer stands may become susceptible to blown-down by high winds. The elevated risk of blow-down would be minimized by selecting leave trees with deep healthy crowns and grouping them where possible. Additionally, higher basal areas would be maintained on ridges and more trees could be removed from lower, more sheltered slopes.

<u>Threatened/Endangered and Special Status Botanical and Fungal Species</u>
This project would not directly affect any T&E or bureau special status vascular plant, lichen, bryophyte or fungi species since there are no known sites within the project area or adjacent to the project.

This project could affect any species that are not practical to survey for and known sites were not located during subsequent surveys. These species would mainly include special status fungi species.

Because units 23D, 23E (western portion) and 14B have not been surveyed, the effects are not known at this time. These project areas would be surveyed for prior to Record of Decision and any newly discovered known sites would be protected according to the 2004 SSSP ROD.

Invasive/Non-native Plant Species (including Noxious Weeds):
Any ground disturbing activity may lead to an increase in the noxious weeds known from within the project area. All road construction, renovation, decommissioning, timber falling and yarding operations would expose mineral soil to varying degrees. Non-native species may become established in any exposed mineral soil areas. Often non-native species persist for several years but soon decline as native vegetation increases within the project areas.

This project would be in compliance with the Marys Peak Integrated Non-Native Plant Management Plan. The risk rating for the long-term establishment of noxious weed species and consequences of adverse effects on this project area is low. Adverse effects from noxious weeds within the project area are not anticipated for the following reasons: 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 minimize the establishment of noxious weeds.

3.2.2 Soils

(IDT Reports incorporated by reference: Soils Environmental Assessment for the Proposed Yamaha Projects Report pp.1-15)

Affected Environment

Soils in the area are primarily Bohannon-Preacher complex. These are clay loam soils moderately well-drained and moderately deep to very deep. They have high infiltration values and hence are not highly prone to surface erosion. The main limiting factor on these soil types is rutting/displacement hazard which means that care must be taken when utilizing heavy equipment on soil surfaces for harvest and yarding.

The second major soil complex in the area is the Digger-Remote-Umpcoos. These are shallower soils which formed primarily on steeper slopes in sedimentary rock. They have a very gravelly loam texture with a high percentage of rock fragments. These soils are less prone to rutting and displacement but, due to the steeper slopes, have a higher risk of surface erosion. Where slopes approach 60percent or steeper, erosion potential is moderate to high. Soil rutting hazard is highest on bare soils or where the duff layer has been displaced (NRCS, 2005). Care must be taken to retain as much of the surface duff layer as possible and to avoid creating compacted yarding trails parallel to the slope.

Soil hazard ratings
Most of the project area is rated as no problem (NP) in the Salem District Timber Production Capability Classification (TPCC). In the NW corner of Section 23 (between Roads 14-7-23 and 23.1) the slopes adjacent to a steep headwater ephemeral stream are mapped as FGR1: fragile due

to steep slopes (70-80percent) adjacent to a stream. Best management practices for FGR1 areas include minimizing road construction and avoiding the concentration of road surface run-off onto steep slopes. This area already has two roads which have been fairly stable since construction. Road 14-7-23.1 has a large fill with an undersized culvert at the stream crossing; the fill and culvert are being slowly undermined by the steam flow but there is no evidence of mass wasting. The FGR1 area is outside of the proposal for Project 1, but is retained within the proposed treatment area of Project 3.

Some undesignated OHV trails on public and private lands were identified during field work in the project area. The trail networks have been developed on surfaces that were originally utilized for forestry operations (i.e. skid roads, old logging trails and fire lines) that were not intended for continual use or for recreational access. In some cases, users have expanded these trails by illegal cutting and removal of trees. The trails within the project area were field reviewed. Trail surfaces range from slightly to moderately compacted/displaced and appear to be used infrequently. Overall, no problems with excessive soil erosion were observed.

Environmental Effects

3.2.2.1 Alternative 1 (No Action)

There would be no additional impacts to soil resources other than those described under the Affected Environment. Without road renovation (culvert replacements), some project area roads would continue to redirect surface flows, causing soil erosion and potentially resulting in sedimentation into nearby streams.

3.2.2.2 Alternative 2 (Proposed Action)

Compaction and disturbance/displacement of soil

Ground based yarding: By using designated skid roads (i.e., multiple passes by rubber-tired skidders or tractors dragging trees to the landing) for all the proposed ground-based units (62 acres), the percentage of the area impacted by surface disturbance and soil compaction as a result of skid roads would be approximately 6percent-8percent (between 4 to 5 acres). On the soils disturbed by skid trails, a moderate amount of top soil displacement and moderate to heavy soil compaction would be expected to occur assuming multiple passes during low soil moisture conditions, slopes under 35percent, and a careful operator.

With the use of mechanized harvesters (including shovel yarders and various low ground pressure tracked machines) operating between skid trails ("ghost trails"), an additional 2percent-5percent of the surface area would be disturbed (between 1 to 3 acres). This could produce scattered areas of light to moderate soil compaction (not likely to measurably affect the reestablishment or growth of vegetation). This assumes a single round trip pass by the equipment on top of a slash mat, low soil moisture conditions and slopes generally less than 35percent.

Some of the potentially impacted acreage listed above for ground-based yarding systems includes existing skid roads from previous logging. Where practical, portions of these existing skid roads would be used for skid roads for this project. As a result, the amount of acreage for new harvest impacts would be less than the totals listed above. For the proposed project, the total (new and existing) area of impacted ground would not be expected to exceed the Salem District guideline to "limit areal (sic) extent of skid roads plus landings to less than 10percent of the unit" (16.1 acres) (RMP Appendix C, Ground Based Yarding).

Skyline yarding: In skyline yarding areas, impacts usually consist of light compaction of a narrow strip less than four feet in width (the skyline road). This is especially true for density management of second growth stands where logs are relatively small and there would be adequate slash on the ground in the corridors to yard over. The area affected would be approximately three acres (3 percent of 99 acres).

Landings: Approximately 50 sites for log landing construction are identified. These sites would compact the soil and displace top soil at the site. However, about half of the surface area used for landings would be the existing road surface (which is already compacted). The additional area adjacent to roads that would be needed for landing area is estimated to be less than one acre of the total project area (less than 1percent). The degree of soil disturbance and compaction in areas where logs are sorted or decked would be expected to be low (shallow and relatively quick to recover). Areas where equipment turns or backs around on multiple times would experience heavy compaction and disturbance to the top soil layer (which could persist for several years to decades following project completion).

Soil disturbance/displacement and compaction from all sources would be local to the site of disturbance and would not affect soil resources on a watershed or landscape scale. The soil physical, chemical and biological recovery to pre-disturbance levels would begin as soon as the source of the disturbance ends. In some cases, such as light disturbance along "ghost trails" (between skid roads), full recovery may occur within one or two years. In other cases, (i.e., surfaces of roads) full recovery to pre-disturbance condition is not possible until the road is fully decommissioned. For the proposed project, the total (new and existing) area of compacted surfaces would not exceed the district guideline to "limit areal (sic) extent of skid roads plus landings to less than 10percent of the unit" (16.1 acres) in the Salem District RMP (Appendix C, Ground Based Yarding).

Site Productivity

Skyline yarding: For skyline yarding systems, measurable long-term effects on site productivity from light compaction on approximately three acres would be minimal to none. Alternatively, with mechanized harvester systems operating on slash, soil impacts between skid roads are expected to result in light compaction in two discontinuous, narrow strips less than three feet in width. The effect on overall site productivity from light compaction is expected to be low (no expected measurable reduction in overall yield for the project area).

Ground based yarding: Soil impacts on skid roads are expected to result in moderate to heavy, fairly continuous compaction within the main 12 foot wide skid roads which would cover 6percent-8percent (between 4 to 5 acres) of the project areas. Impacts would be light to moderate and less continuous on less-traveled portions of skid roads. The estimated reduction in growth rate for trees on moderate to severely impacted areas is 17percent-27percent during the following 10-20 years of growth (Froehlich and McNabb, 1984). On a project area basis, this is a 0.01percent maximum reduction in growth rate.

As trees age, the negative effect on growth from soil compaction and displacement becomes less pronounced. 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 roads and small landings. If top soil loss/ displacement/compaction are severe or more extensive, then the negative effects would be more pronounced and longer lasting. These

effects are assumed to persist for several decades based on recovery rates observed in research in the Pacific Northwest on similar soil types (Froehlich and McNabb, 1984).

Road Work: Constructing up to 1,700 feet of new roads would displace topsoil and compact subsoil on 1.1 acres (less than 0.6percent of total project acreage). The roads to be constructed would be primarily on moderate topography (slopes of approximately 3percent to 20percent), so the total width of the clearing would be expected to be around 25 feet. This narrow clearing would have a minimal effect on overall tree spacing and stocking. In addition, the risk of road related landslides in these locations is minimal. The new construction would be decommissioned following harvest, so some recovery back to a forested condition would occur in this area over time (i.e., decades). Placing slash and debris over exposed surfaces, installing water bars, and blocking vehicle access would decrease surface erosion and runoff. This also provides a source of organic material to the disturbed soil.

Road surfaces would essentially be converted to non-forest and would remain far below potential site productivity levels until they were actively recovered and restored. These effects would be concentrated on the main road surface (approximately 20 feet wide) and would dissipate laterally as you move away from the road surface.

Road renovations would result in no change in the amount of current non-forest land. Drainage structure replacement would occur at several locations. These actions would improve drainage and road surface conditions. This would result in less road surface erosion into the surrounding area and streams and reduce the risk of land-sliding or mass wasting associated with roads in steep landscapes (e.g., portions of Road 14-7-23).

The renovation work would be expected to result in some minor short-term roadside erosion. This would be most likely to 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 or two years and erosion rates would be expected to return to very low levels thereafter.

Effects on Mycorrhizal Fungi: Forest stand density management and yarding would likely lead to a shift in the abundance and distribution of mycorrhizal fungi which assist forest trees in the uptake of water and nutrients from the soil (Colgan III *et al*, 1999). It is unclear to what extent this effect is a result of changes in microclimate, changes in woody substrate and live trees, or physical disturbance of the surface soil. Because there has been very little research on the subject, it is also unclear what effect, if any, this would have on soil fertility and forest regeneration and productivity in project area soils.

Effects on Mass Wasting: Areas with potential for slope instability and mass wasting were identified during field work for the project proposal. All proposed treatment units are outside of any areas mapped as unstable or prone to mass wasting. Tree removal is not proposed on steep, unstable slopes where the potential for mass wasting adjacent to stream reaches is high. Therefore, increases in sediment delivery to streams due to mass wasting induced by loss of root strength are unlikely to result from this action. In addition, the minimal levels of surface disturbance under this proposal would be unlikely to result in the concentration of runoff on mass wasting susceptible slopes.

Although Road 14-7-23 passes through an area mapped as fragile due to steep slopes, it has remained stable for many years. The road has been field reviewed by the area hydrologist and engineer; recommendations for the maintenance or improvement of the road drainage would be implemented.

Background surface erosion rates in the project area are well below the assumed rate of soil formation and even farther below the rate necessary to result in loss of productivity. Reducing stand density by approximately half is estimated to increase surface erosion but rates would still remain far below rates of renewal.

Skid Road Blocking: Blocking skid roads 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 skid road surfaces would further reduce surface erosion potential. Where skid roads are being actively used for recreational purposes, additional measures to block the roads (placing rock, large wood and organic material) would promote recovery of the soil's physical and chemical properties and reduce surface erosion at these sites.

Pile Burning: On the sites where piles are burned, surface organic material would be removed, increasing localized potential for soil erosion. However, sediment delivery to streams is highly unlikely, since burn-pile areas would be outside Riparian Reserves, widely dispersed, and typically smaller than 20 feet in diameter. Pile burning and rain impact on burned spots can decrease infiltration capacity until natural re-vegetation occurs. Displaced soil would be filtered and retained by the intact vegetation immediately surrounding the burn pile spot. Since burning would occur during wet soil conditions, heat damage to the upper soil layer would be moderate and only occur in scattered localized sites.

CWD Creation: Coarse woody debris generated by logging slash, windthrow, or bark beetle infestation left on site following operations would help cover the soil surface and limit surface erosion. 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. CWD would be cut and left in place and the impacts would be of no greater extent than a natural tree fall.

3.2.3 Water

(IDT Reports incorporated by reference: Hydrology/Channels/Water Quality Addendum for Yamaha Project pp.1-16)

Affected Environment

Common to all project areas

The main project area is located in two 7th field watersheds with approximately 7,374 acres in combined drainage area. Portions of Project 4 are also in the Fall Creek catchment while Project 5 is in the Trout Creek catchment. All proposed units ultimately drain to the Alsea River. There are no key watersheds in the project area.

Project area stream flow

The project area lies below the transient snow zone (TSZ), an elevation zone subject to rain-on-snow events (ROS) that have the potential to increase peak flows during winter or spring storms.

Terrain in the project area catchments is generally hilly with elevations ranging from approximately 1,000 to 1,500 feet. Therefore, the project area is generally not at a high risk for peak stream flow events due to warm storm fronts rapidly melting the snow pack. The project area receives approximately 64-70 inches of rain annually. Streams are similar to other Western Oregon streams where highest discharge takes place during winter storm events. Many small headwater channels (intermittent or ephemeral) dry up completely during the summer and early fall.

Project area stream channels

Stream channels in the project areas are primarily small 1st and 2nd order headwater streams. These streams are generally narrow, with moderate gradient, low sinuosity and shallow to moderate entrenchment. Channel substrate is predominantly fines with steeper headwalls containing larger cobbles and some boulders. Most channels contain scattered pieces of CWD with low levels of LWD.

Existing roads and stream channels

Where roads cross streams, the bed and banks of channels have been altered. Within the road right-of-way the channel surface, banks and bed have been compacted, vegetation disturbed or removed and the bed/banks within the road right-of-way have been obliterated. In some locations, restrictions in stream flow due to undersized culverts have resulted in the deposition of sediment and woody material upstream of the crossing. In some cases (such as the culvert on Trout Creek in Project 5) this has blocked stream flow through the culvert and high water is actively eroding the road fill. In other cases it has resulted in blocked culverts and stream diversion down road surfaces and ditches. Downstream from culverts, outflows have scoured the beds and banks of stream channels. Both effects are generally limited to less than 100 feet upstream or downstream from the culverts and, due to the stable nature of most channels in the watershed, little to no additional disturbance to channel morphology has been noted. However, local effects may contribute cumulatively to watershed wide reductions in aquatic habitat, water quality, and fish passage.

Project area wetlands

No wetland/pond complexes are identified on National Wetlands Inventory maps or in the Benton County Soil Survey in the project area. The BLM Geographic Information System identified some fairly large areas adjacent to local streams as potential wetlands. These potential wetlands are excluded from treatment under all projects except Project 4 which may involve modifications of stream channels near wetland areas.

Project area water quality

The water quality parameters with the potential to be affected by this proposal include stream temperature, fine sediment supply and turbidity. Additional water quality parameters (e.g., nutrients, pesticide and herbicide residues, bacteria, etc.) are not highly sensitive to forest harvest and road construction [(United States Environmental Protection Agency, USEPA, 1991)] and were not reviewed for this analysis.

Summer Stream Temperature

The majority of tributaries in or near Projects 1-3 do not flow on the surface during most summers. Therefore, these channels are not at risk to heating by exposure to direct solar radiation. The few perennial streams have very low to intermittent flow during the summer. Most of these channels are sufficiently shaded by streamside vegetation to meet summer temperature standards.

The BLM has not collected stream temperature data in the main project area. Field surveys, review of aerial photographs and Interagency Vegetation Mapping Project data indicate that shading is near full potential along most of the perennial streams on public lands in the main project area with canopy closure exceeding 80percent along most stream reaches.

Turbidity and Fine Sediment
The state of Oregon has not identified water quality concerns or issues in the South Fork Alsea watershed related to sediment supply, transport or turbidity levels. In addition, no data for stream turbidity or sediment delivery and transport in the project area was located for this assessment. Past turbidity monitoring by BLM personnel has identified high turbidity levels in lower Peak Creek (tributary to South Fork Alsea River) but no follow-up data has been located. Winter field reviews of area streams noted that water clarity appeared low during a major storm event (December, 2006) and high turbidity levels were noted in many of the small tributaries and main channels in the project area. Much of this may be a natural result of the dominance of fine textured soils in and around the project area.

Oregon Department of Environmental Quality (DEQ) Standards
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. The South Fork Alsea River is 303d-listed for exceeding summer temperature standards from river mile 0 to 17.2 (approximately three stream miles downstream of the proposed project).

The ODEQ also published an assessment, the 319 Report, which identifies streams with potential non-point source water pollution problems (1988 Oregon Statewide Assessment of Nonpoint Sources of Water Pollution). The lower South Fork Alsea River is listed for having moderate water quality conditions affecting fish and aquatic habitat.

Beneficial Uses
There are no known municipal or domestic water users in the project area. There are no water rights listed for Peak Creek. There is an in stream water right along the South Fork Alsea River for anadromous and resident fish rearing approximately three stream miles downstream of the project area. Irrigation and livestock watering occur in the Alsea valley, several miles downstream from the project area. Additional recognized beneficial uses of the stream-flow in the project area include anadromous fish, resident fish, recreation, and esthetic value.

Environmental Effects

3.2.3.1 Alternative 1 (No Action)

If no action is taken, the watersheds would continue to experience logging, road construction, and recreational use. The large majority of activities would occur on private lands and would continue to contribute fine sediments into the stream system. No change, other than natural fluctuations, in stream temperatures or flows would occur, unless large areas are cleared of vegetation or substantial portions of riparian vegetation are removed.

3.2.3.2 Alternative 2 (Proposed Action)

Project 1 Area Only

Project Area Stream flow

Mean Annual Water Yield
Increases in mean annual water yield following the removal of watershed vegetation have been documented in numerous studies around the world (Bosch et al., 1982). Forest vegetation intercepts and evapo-transpires precipitation that might otherwise become runoff. Therefore, this project would likely result in some incremental increase in annual water yield which correlates with the removal of the conifer over-story (Troendle et al., 2006). However, other than increased peak flows the "increase in fall and winter discharge from forest activities is likely to have little biological or physical significance" (USEPA, 1991).

Base Flow
Outside of fog-drip zones, total removal of the forest cover usually results in an immediate increase in summer base flow, presumably due to the reduction in evapotranspiration and interception, with a slow recovery to pre-treatment flows after several years (Harr et al., 1979). However, when a stand is thinned, the root systems of the retained conifers would quickly utilize any additional soil moisture availability and transpire it as "water use per unit of leaf area can increase dramatically" (Troendle et al., 2006). Therefore, the project would be unlikely to result in any measurable change to local base flow.

Peak Flow Effects from Harvest
Since the project area is below the elevation zone normally subject to transient snow accumulations in the winter, the reduction in stand density is unlikely to result any increase in snow accumulation and melting during ROS events. In the Coast Range of Oregon, below TSZ elevations, reductions in stand density are unlikely to result in an augmentation of peak flow (Moore *et al*., 2005). Therefore, this proposal is unlikely to result in detectable changes in peak flows in project watersheds as a result of harvesting trees.

Peak Flow Effects from Roads
This proposal would not alter existing roads in a way that would likely reduce or increase effects to peak flows attributable to the current road network. Thus it would maintain the current condition and trends relative to hydrology and stream flow, that existing roads contribute to. In addition, existing roads were inventoried by area specialists and recommendations for renovation and repair of road surfaces would be implemented under the proposed action. Some of these actions would reduce existing road effects on peak flows by routing water to soil surfaces where it can re-infiltrate.

New road construction and renovation would result in direct hydrologic effects to the surfaces altered by road construction. In these locations, rainfall interception and routing of surface and subsurface water would be altered for the life of the road. The spatial extent, and potential for contributing to a direct or indirect effect on stream flow of new road construction would vary with the position of the road surface on the landscape and the quantity of soils and vegetation disturbed at the site.

Roads constructed on flat surfaces result in little or no change in streamflow because intercepted rainfall on these roads is drained to adjacent soils where it quickly infiltrates the soil. Since sub-surface disturbance is minimal, these roads are also expected to have little or no effect on sub-surface or groundwater flow; thus having no effect on the timing or routing of stream flow in the watershed. Under these circumstances, road construction has a low risk of altering watershed hydrology or peak flows (Wemple et al, 2003).

New road construction under the proposed action would be limited to stable slopes outside of riparian reserves, and no new stream crossings would be constructed. Slopes bisected by new road construction are predominately low to moderate in gradient and would not require extensive full bench or cut and fill construction. Road surfaces would be designed to efficiently drain surface water to adjacent slopes where it would infiltrate into the soil and groundwater. The proposed new roads are at low risk for intercepting ground water and routing surface drainage to streams; therefore, they are unlikely to result in an extension of the stream network or to have any measurable affect on watershed stream flow or peak flows.

The proposed action is unlikely to affect the flow, quantity or quality of watershed groundwater. Since the action is unlikely to alter in a measurable manner patterns of surface flow and runoff, by extension it has little capacity to affect groundwater patterns which are intimately linked to the surface.

Stream channels and wetlands

There would be no direct alteration of the physical features of the project area stream channels or wetlands under this proposal. New road construction would not cross stream channels or wetlands. Stream banks, wetlands and channel beds would be protected from direct physical alteration or disturbance by harvesting equipment. With the exception of the proposed road renovation at stream crossings, disturbances are kept a minimum of 50 feet from all wetlands and stream channels.

The proposed action is unlikely to affect stream flow in a detectable manner and therefore any indirect effects to stream channels as a result of increases in peak flows is unlikely. Thus, the proposed action would be unlikely to result in any detectable effects, such as increases in bank erosion, channel incision, loss of floodplain connectivity or alteration of local wetland hydrology that could result from augmented peak flows or altered watershed hydrology.
Repairs to existing roads at stream crossings and through wetlands would maintain the channel alterations currently in place. In some cases, larger culverts and more stable fills would allow for improved channel morphology over the long-term. This would reduce sediment inputs at the crossing and by increasing the culvert's capacity to accommodate the stream during peak flows (i.e., passage of water, wood and bed-load).

Over the long-term, reductions in stand density would likely increase riparian and upland forest health and tree size. This could lead to increased large wood recruitment for stream channels, an important factor in proper channel function. In addition, more open stands would provide for the growth of important riparian species in the understory, such as western redcedar, which are currently suppressed. Large wood in main channels would likely slow stream velocity, increase retention of organic material, capture bed load, and improve aquatic habitat (Gregory & Wildman, 1998).

Project Area Water Quality

Summer Stream Temperature Maximums

Field surveys and review of aerial photographs indicate that shading is near full potential along most of the perennial streams on public lands in the project area with canopy closure exceeding 80percent.

Most channels in the project area have an intermittent flow regime and do not flow on the surface during most summers. Water temperature in these channels is influenced directly by soil temperature which is a function of elevation, aspect and soil type. Therefore, these channels have little potential to be heated by exposure to direct solar radiation. A reduction in stand density in the riparian forest near these streams is unlikely to result in any measurable alteration of temperature regime. Nevertheless, most primary shade zone vegetation would be retained along intermittent and ephemeral streams.

Sediment Supply, Transport and Turbidity

In most cases, management practices with the potential to accelerate erosion fall into three categories: road construction/maintenance and hauling, timber harvest or yarding, and site preparation for reforestation (particularly prescribed burning). Best Management Practices and mitigation measures are proposed to eliminate or limit acceleration of sediment delivery to streams in the project area. As a result, it is unlikely that this proposal would lead to a detectable long-term alteration in sediment delivered to streams, stream turbidity, stream substrate composition, or sediment transport regime.

Road Construction and Maintenance: New road construction would occur primarily on low to moderate slopes with stable surfaces emanating from the existing road network. The risk of road related landslides in these locations is minimal. Road construction in this proposal would not cause an expansion of the stream network nor would it provide additional opportunities for road sediment from fill failures or ditch-line run-off to enter stream channels. All road construction would utilize the BMPs required by the Federal Clean Water Act to reduce non-point source pollution to the maximum extent practicable.

Maintenance and renovation of existing roads (i.e., culvert replacement, added rock and blading of road surfaces) would occur during the dry season. This renovation would likely result in increased turbidity during project implementation at stream/road intersections on perennial streams. During project work, turbidity in perennial streams would be visually monitored and be maintained within limits set by the ODEQ.

Turbidity at stream crossings may also increase slightly in the first winter following the project. This would be most evident during early winter storms where run-off on the road surface is diverted to stream channels. Increased turbidity is unlikely to be visible or measurable beyond 800 meters below the site of the disturbance (see Foltz and Yanosek, 2005). Turbidity levels would likely decrease as disturbed road surfaces (and the channel bed) become “armored” (i.e., fines are removed). Within one or two years, the supply and transport of fines from the road surface would return to pre-project levels. Any sediment yield increase would be difficult to measure and is unlikely to contribute more than 1percent to the supply or transport of sediment in these watersheds. Over the long-term, road repairs should help reduce risks to water quality and watershed hydrology that these roads currently pose.

Timber Hauling

Timber hauling during periods when water is flowing on roads and into ditches could potentially increase stream turbidity and suspended sediment transport with indirect detrimental effects on the streams physical and biological attributes (Cederholm et al. 1980). The main haul route would be on rocked forest roads to the main paved surface road. Project design features include no hauling during wet periods when the potential for fine sediment delivery to streams is highest.

To ensure haul is not contributing to increased turbidity in local streams, the Authorized officer would visually monitor the road network and turbidity levels at road/stream intersections during haul. If turbidity levels approach limits set by the ODEQ, the Authorized officer would require the timber sale purchaser to reduce fine sediment run-off into the stream. Methods would include (but are not limited to): adding rock to the road and re-grading of the road surface to improve drainage, placement of bark bags or other material in the ditch to filter sediment out of the water, restricting haul until conditions improve.

Fuel Treatments

Pile burning along roads and on landings within units may produce small patches of soil with altered surface properties that restrict infiltration. However, these surfaces would be surrounded by large areas that would easily absorb any runoff or sediment that may reach them. In addition, pile burning would occur away from surface water or streams and outside of Riparian Reserves. Therefore, pile burning is unlikely to result in surface erosion with delivery of sediment to local streams.

Tree Harvest and Yarding

There would be no tree falling and yarding into or through streams under this proposal. Best Management Practices would include directional falling of trees, as well as yarding away from these features. Stream protection zones around all streams would eliminate most disturbance of stream-side vegetation. Therefore, it is unlikely that this proposal would increase bank erosion or channel cutting by altering channel roughness, redirecting flows or altering bank-stabilizing vegetation.

Areas with potential for slope instability and mass wasting were identified during field work for the project proposal. All proposed treatment units are outside of any areas mapped as unstable or prone to mass wasting. Tree removal is not proposed on steep, unstable slopes where the potential for mass wasting adjacent to stream reaches is high. Therefore, increases in sediment delivery to streams due to mass wasting induced by loss of root strength are unlikely to result from this action. In addition, the minimal levels of surface disturbance under this proposal would be unlikely to result in the concentration of runoff on mass wasting susceptible slopes.

Surface Erosion Potential

Sediment transport normally increases during large storm events thus increasing turbidity and reducing the clarity of the water so that sediment supplied by this alternative would be unlikely to be discernible by the average observer. As stream flows recede, sediment would deposit and turbidity would return to background levels at low flow. Therefore, it is unlikely that this alternative would result in a discernible effect to the levels of turbidity or water clarity in the South Fork Alsea River. Typically, sediment yields from forest harvest decrease over time. The quantity of surface erosion with delivery of sediment during large storm events would likely drop back to current levels within three to five years as the remaining forest stand fills out.

Skyline yarding corridors and ground-based skid trails, if sufficiently compacted, could route surface water and sediment into streams. However, several factors would limit the potential for this to occur. Even if compacted, high levels of residual slash left on yarding corridors (both machine and cable), could reduce runoff by deflecting and redistributing overland flow laterally to areas where it could infiltrate into the soil. In addition, riparian areas have high surface roughness, which can trap any overland flow and sediment before reaching streams, gentle to moderate slopes in much of the project area provide little opportunity for surface water to flow and the small size of trees being yarded would limit surface disturbance to minimal levels.

Where yarding operations are resulting in excessive compaction or gouging of the soil surface, the Authorized officer would require the operator to take additional actions, such as utilizing intermediate supports, and constructing water bars to reduce impacts to reduce effects below a detectable level.

The proposed action would not likely alter the water quality of surface waters in a measurable manner and, by extension, has little opportunity to alter ground water quality. No new pathways which could lead to groundwater pollution would be created; nor does it introduce pollutants that can put groundwater quality at risk (i.e., heavy metals, organic compounds, toxic materials, etc.).

3.2.4 Fisheries/Aquatic Habitat

(IDT Reports incorporated by reference: Yamaha Fisheries Report pp. 1-20)

Affected Environment

Common to all project areas

The proposed projects are all contained within the Upper Alsea 5th Field Watershed. The relevant fish bearing streams affected by the proposed projects are South Fork Alsea River, Peak Creek, and Trout Creek covering two 6th field sub-watersheds and six 7th field drainages. The proposed density management project (Project 1) would treat 160 acres limited to two drainages, Lower Peak Creek and Dubuque Creek. The proposed snag/CWD creation and large tree release project (Project 3) is also in the Lower Peak Creek and Dubuque Creek drainages. The proposed young stand management project (Project 2) is a small 23-acre unit within the Lower Peak Creek drainage. The LWD placement project (Project 4) is proposed to occur in the South Fork Alsea River covering four miles of stream, and Peak Creek treating 1.5 miles of stream. The LWD project is spread across five drainages; Lower Peak Creek, Dubuque Creek, East Fork Peak Creek, Williams Creek, and Fall Creek. The proposed Trout Creek culvert replacement project (Project 5) is located on the 14-7-22 road in the Trout Creek drainage. The proposed South Mountain County Road improvement project (Project 6) is located in the Lower Peak Creek, Dubuque Creek, and Trout Creek drainages.

<u>South Fork Alsea River</u>

Alsea Falls on the Upper South Fork Alsea River, located in Section 25, is a barrier to all anadromous fish (BLM 1995). This falls site is a combination of a steep slide and 12 foot falls with a total vertical rise of approximately 45 feet (Wagner et al 1986). Several fish species are known to be present in the project area including the South Fork Alsea River. Historically, coho salmon and adult steelhead had been stocked in the Upper South Fork Alsea River above the falls (House 1986). The Oregon Department of Fish and Wildlife (ODFW) no longer stocks any anadromous fish above the falls (ODFW 1997). Upstream of the falls only resident cutthroat and sculpins are known to be present. Western brook lamprey may exist above Alsea Falls; however,

no information appears to be available to definitively support or refute their presence. Below the Alsea Falls anadromous and resident species are known to reside (BLM 1995).

Fish distribution surveys were conducted in the Spring of 2006 covering the treatment units of Section 23 and 14 which drain to the South Fork Alsea River. No fish species occur in Project Areas 1, 2 and 3.

Presence/absence surveys were conducted on all the small tributaries downstream of the project area. A medium sized tributary in the northeast quarter of Section 21 was documented to have cutthroat trout above the Trout Creek Road (14-7-22). The exact distribution in this stream has not been documented, as the stream is predominately on private lands. The small tributary in the northeast quarter did not have cutthroat trout above the South Fork Alsea Access Road. In general, the small tributaries which drain the project area were considered too small and too steep to support fish.

All of the South Fork Alsea River through the project area was surveyed using ODFW protocols in 1997 (see Reach Map in Fisheries Report). Reach 6 is adjacent, or closest in proximity, to project areas 1, 2 and 3 and a portion of Project 4. Reaches 4 and 7 through 10 of the South Fork Alsea River stream survey primarily cover Project 4 areas.

Reach 4 is primarily located in Section 21, nearly 2 miles downstream from Project 1 and 2 areas, covering 7,639 feet of stream between Rock Creek and Trout Creek. Pool habitat and silt/sand sediment distribution in the reach are below desirable levels. Gravels and the channel width to depth ratio are at undesirable levels. Key pieces of wood per mile indicate the reach was below desirable levels, at approximately 21 pieces per mile. All the surveyed reaches of the South Fork Alsea River are currently meeting ODFW percent shade desirable benchmarks.

Reach 6 covers portions of Sections 22 and 26 up to the confluence with Peak Creek and includes portions of the riparian area affected by proposed Projects 1, 3, and 4. Pool habitat appears to be adequate, meeting the desirable benchmark. The silt/sand and gravel sediment distribution in the reach is currently below desirable levels. The channel width to depth ratio is undesirable. Key pieces of wood per mile indicate the reach was below desirable levels, also approximately 21 pieces per mile.

Reaches 7 to 10 cover 18,230 feet of stream from Peak Creek thru Section 36, approximately ¾ of a mile beyond Road 14-6-9. Reach 7 is between Peak Creek and the Alsea Falls. Reaches 8 thru 10 are all located upstream of Alsea Falls. Reaches 9 and 10 include stream lengths that were previously treated with LWD in 2002, as part of the Falls Over Stream Enhancement Project. Habitat conditions have improved since the 1997 surveys as a result of the LWD treatments; increasing the amount of key wood and generally resulted in the deposition of fine sediment upstream of many of the treatment sites.

Overall the amount of pool habitat appears to be desirable in reaches 8, 9, and 10. Reach 7 is below desirable benchmark for pool habitat. The silt/sand sediment distribution in reaches 7 and 8 are below desirable levels, and reaches 9 and 10 are at undesirable levels. Gravel distribution in reach 7 is deficient, reach 10 is desirable, and reaches 8 and 9 are in between deficient and desirable. The channel width to depth ratio is undesirable for reaches 7 and 9, and moderate in reaches 8 and 10. Key pieces of large wood were largely absent in reaches 8, 9, and 10. Reach 7 had more pieces of key wood per mile, but still below the desirable benchmark, with only 17

pieces per mile. Habitat conditions for all the project reaches are described in the Yamaha Fisheries Report (Table 2) and indicate whether the current conditions are meeting ODFW benchmarks.

Most culvert replacement locations are at least 100 feet from the South Fork Alsea River channel. Six culverts are seeps, or cross-drains, with no evidence of channels connecting the culvert drainage to the river. There are no fisheries concerns with replacing these pipes so long as the activity is done in the dry season and exposed soils are seeded following construction.

There are six stream crossing culverts proposed for replacement. Only one of these crossing was in close proximity (less than 30 feet from outlet to the river) to the South Fork Alsea River (opposite the McBee Park recreation site). None of the stream crossings are fish bearing, (based on stream gradients). Due to the proximity of all these crossings to the South Fork Alsea River, there are potential fisheries concerns. The South Fork Alsea River contains Chinook and coho salmon; both species are covered by the Magnuson-Stevens Fishery Conservation and Management Act (MSA), and the South Fork Alsea River is considered Essential Fish Habitat under MSA.

Peak Creek

Green Peak Falls is located in the southeast quarter of Section 23 in Peak Creek. Green Peak Falls is a near vertical falls over 80 feet high and is the upper extent of anadromous fish distribution in Peak Creek (BLM 1995). Peak Creek is tributary to the South Fork Alsea River in the Upper Alsea Watershed. Species distribution above and below the falls is similar to the South Fork Alsea River. Fish distribution surveys in Section 23 were conducted in the Spring of 2006 and documented the presence of cutthroat trout and sculpin inhabiting Peak Creek. No other species were captured during these surveys. The tributary draining the northeast corner of Section 23 was surveyed for fish presence. No fish were found above the 14-6-17 road crossing, approximately ½ mile downstream from the project area, in Section 24. All other tributaries draining to Peak Creek from the project area in Section 23 are considered too steep for fish presence.

Peak Creek through the project area was surveyed by ODFW in 1995. Reaches 1 and 2 are adjacent, or closest in proximity, to the density management and old-growth release project areas. The reaches in the project area start at the junction with South Fork Alsea River and covers approximately 0.8 miles of stream. Pool habitat, percent gravels, and width to depth ratio are below desirable levels in both reaches. Shade is poor in the lower reach; however, shade composition of the lower reach is affected by a private recreational development near the mouth of Peak Creek. Stream shading of reach 2 is desirable. The percent of silt/sands in the substrate is excessive, undesirable, in both reaches. Key wood is largely absent in reach one. Key wood was below desirable levels in reach 2, calculated at 17 pieces per mile.

Project 4 includes a lower portion of Peak Creek tributary, in Section 19. This reach was surveyed using ODFW protocols in 1995 (ODFW 1995). Reach 1 is approximately 11,100 feet in length. The amount of pool habitat and shade in the reach was at desirably high levels. The percent sand/silt was very high, at undesirable levels, in the reach. Gravels and the channel width to depth ratio are at moderate levels. The number of key pieces of wood was undesirable, at approximately 7 pieces per mile.

Threatened, Endangered, and Special Status Species
Oregon Coastal (OC) coho salmon was delisted under the Endangered Species Act on January 19, 2006. No consultation with the National Oceanic Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) would be necessary for this species at this time.
Pursuant to the Magnuson-Stevens Fishery Conservation and Management Act, as amended, an assessment of proposed actions effects to Essential Fish Habitat (EFH) and consultation with NOAA NMFS is necessary for projects which may adversely affect EFH. For purposes of this analysis, stream reaches with known populations of Chinook or coho salmon present, or considered highly likely to be present are considered EFH. The South Fork Alsea River and Peak Creek of the Upper Alsea Watershed have been documented with coho and Chinook salmon (BLM 1995). Both streams are limited in salmon distribution due to large natural waterfalls.

Common to Project 1 only
Large woody debris in tributary channels in Project 1 area was not measured. However, observations of wood quantities were made during field survey work (Yamaha Silvicultural Prescription and Riparian Report). The reports noted scattered amounts of wood in streams throughout the proposed project area. Recent additions of wood were predominately smaller sized deciduous species and occasional second growth conifer that has blown down or fallen over due to slope instability.

The majority of the rocked road haul route is located in Section 23 including seven intermittent stream crossings in the Upper Alsea Watershed. Road renovation, including spot rocking, brushing, blading, and replacement of eight ditch relief culverts may occur as part of the proposed action. Seven stream crossing culverts would be replaced as part of the proposed renovation (none are fish bearing). The South Fork Alsea Access Road is a paved road and would be the primary haul route to the nearest utilization center. The South Mountain County Road would be used as a haul route for a portion of Unit 23D.

All of the rocked road segments of the haul route are over intermittent tributary stream crossings, no rocked road crossings are over a perennial stream. A portion of the rocked road haul route drains to Peak Creek including six stream crossings in the East half of Section 23. The closest crossing in the Peak Creek drainage is 0.25 miles upstream from fish bearing habitat. The remainder of the rocked road haul route drains to the South Fork Alsea River. Four stream crossings in the Southwestern quarter of Section 23 drain to the South Fork Alsea River between 350 and 700 feet upslope from the river.

Environmental Effects

3.2.4.1 Alternative 1 (No Action)

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. Impacts to aquatic habitat would be unlikely with the implementation of the No Action Alternative.

3.2.4.2 Alternative 2 (Proposed Action)

Yarding/Falling

Stream flow

The proposed project would affect less than 0.2percent of the forest cover in the Upper Alsea River Watershed. The low elevation of the proposed action was considered unlikely to detectably alter stream flows (Hawe, 2007). No discernable effects to fish habitat within the treatment area are anticipated from undetectable changes in peak and base flows, and would be even less likely to affect fish habitat downstream.

Water Temperature

According to the stream shading sufficiency analysis, the proposed SPZ of 55 feet was sufficient to protect critical shade in the primary shade zone (Caldwell 2007). 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 (ODFW 1995, Hawe 2007).

Most channels in the project area are intermittent / ephemeral and not subject to summer solar warming. Retention of the SPZs and the location of treatments primarily adjacent to intermittent channels would be expected to maintain the existing stream temperature regimes. The proposed action is unlikely to increase instream temperatures at the site (Hawe 2007). Based on the shade sufficiency analysis, the hydrology report water quality analysis, and the project design features, the proposed actions are unlikely to affect fish habitat both at the treatment site and downstream.

Coarse Woody Debris and Large Woody Debris

Based on the riparian stand analysis, the proposed action would retain trees which would reach larger diameters (20 inches) 13 years earlier compared to the no treatment option, creating natural opportunities for higher quality LWD recruitment in the long-term (Caldwell 2007). In the short-term the smaller woody debris would continue to fall from within the untreated SPZs; larger wood would begin to be recruited from farther up the slopes as the treated stands reach heights of 200 feet. Wood with a larger range of sizes would potentially be recruited into streams over the long-term in treated stands, thus potentially improving the quality/complexity of aquatic habitat adjacent to the treatment areas in the future.

Water Quality

The proposed project is 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 (Hawe 2007). Stream Protection Zones, residual slash, and use of designated skid trails should keep sediment movement to a minimum. As the proposed actions are not likely to measurably alter water quality characteristics at the treatment sites, it would be unlikely to affect aquatic habitat adjacent to or downstream from the project area.

Road Construction

The proposed action includes the construction of approximately 1,700 feet of road. The proposed roads are unlikely to increase drainage network in the watershed as the new construction is outside riparian reserves. All new construction would be decommissioned following harvest. Thus road

construction is unlikely to increase sediment or stream flows which may affect stream channels and affect fish.

Construction would not occur closer than 800 feet from any stream channels. The potential of mass wasting of timbered lands associated with the affected road construction above the affected streams is unlikely (Hawe 2007). Roads would be located away from any unstable areas and be located mostly on or near ridge tops with moderate topography. No short-term negative effects to the recruitment potential of large wood to the headwater reaches of Peak Creek or the South Fork Alsea River tributary are anticipated as a result of proposed road construction. Over the long-term as the riparian stand matures the trees nearest the stream have the greatest likelihood of providing sources for LWD. The roads are proposed to be blocked and decommissioned following harvest and would move towards a recovered state over time. Since no site level effects are anticipated to occur to LWD recruitment to the small intermittent streams in the project area from the proposed road construction, no effects to fish habitat are anticipated.

Timber Hauling

The proposed year round hauling on rocked and paved roads is not expected to result in detectable quantities of sedimentation reaching fish bearing streams. This is due to the limited number of crossings on relatively gentle road gradients. Any sediment that would reach the intermittent stream from the haul route crossings would likely be assimilated into the intermittent channels before reaching fish habitat (Duncan et al, 1987). The duration of sediment reaching the intermittent streams would be short-term, only occurring during the first wet season during and immediately following hauling activities. Site-specific effects to fish habitat downstream of the intermittent stream crossings are not anticipated.

The proposed hauling on native surface roads, (e.g. South Mountain County Road), would be seasonally restricted to minimize surface transport of sediment and reduce maintenance needs during the wet season. The magnitude of sediment generated at the sites that could reach non-fish bearing streams would be minimized with application of native surface seasonal restrictions, sediment control PDFs (silt fences, hay bales etc.) and cessation of haul during heavy rainfall.

Road Renovation

The proposed road renovation work is intended to improve drainage and road surface conditions, resulting in less erosion into the surrounding area over time. The proposed road renovation treatments (rocking, grading, ditchline reconstruction, and cross drain replacements) associated with these crossings would be expected to result in a minor short-term increase in erosion in the winter following work, until reestablishment of vegetation in the subsequent growing seasons (Hawe 2007). Any sediment that would reach intermittent streams from the streams crossings affected by road renovation would likely be assimilated into the intermittent channels before reaching fish habitat (Duncan et al, 1987). Any sediment reaching fish habitat is expected to be undetectable against background turbidity.

Replacement of the stream crossing culverts may generate a small amount of sediment at each treatment site. However, the proposed treatments are not located in habitat occupied by Chinook or coho salmon and no direct disturbance of occupied habitat would occur with the culvert replacements. Most sediment generated at each treatment site would be assimilated into the stream channels before reaching the South Fork Alsea (Duncan et al 1987). Application of the design criteria would limit the amount of fine sediment entering stream channels (USFS&BLM 2002 pg 60) or from reaching downstream habitat occupied by Chinook and coho salmon. The

BA states that sediment turbidity impacts should be short-term and would not result in serious injury of death. The BLM/USFS BA further states:

- ✓ Road maintenance is not expected to measurably affect substrate composition. All project design criteria's that minimize sediment would be implemented. These practices would reduce, but not eliminate sediment from reaching fish habitat. Some sediment may enter stream channels as a result of using heavy equipment and exposing soils. The amount of sediment that enters a stream is expected to be small, infrequent, and of short duration. Short-term effects such as localized increases in fine sediment in gravels or along channel margins may be seen. However, substrate quality would not decrease over time. If projects are successfully implemented, substrate quality should actually improve because chronic sediment sources would be corrected"(pg. 61).

As sediment generation is expected to be limited at the site and substrates would not be measurably altered due to the proposed actions, the level of effect would be considered insignificant (USFS et al 2004, see magnitude factor analysis pg 11). As site level analysis indicates no more than insignificant effects, no adverse effects to EFH are anticipated from the proposed actions.

Pile Burning

Pile burning is not expected to result in short-term or long-term effects to fish. Short-term effects on soil infiltration is possible at the site of the burn pile resulting in surface runoff (Hawe 2007), but not likely to influence fish habitat. The Riparian Reserves are expected to provide sufficient distance from the stream to capture any surface erosion from pile burning treatments.

Threatened, Endangered, and Special Status Species

<u>Common to Projects 1 and 2</u>

The primary haul route (South Fork Alsea Access Road) in closest proximity to EFH, is paved and no impacts are anticipated from using this route. Hauling on rocked roads in Section 23 would be available for year round hauling; however, none of the rocked road stream crossings in Section 23 are over EFH. At least 300 feet of intermittent stream length separates the haul route from EFH habitat. These intermittent channels would assimilate and redistribute sediment delivery patterns to habitat downstream. During wet periods when background sediment transport and delivery would be elevated, the magnitude of effect from hauling is expected to be undetectable in EFH streams. Hauling on native surface roads would be seasonally restricted to limit sediment transport from these road surfaces, and is expected to prevent sediment reaching EFH downstream.

Connected actions of hauling associated with Projects 1 and 2 are not anticipated to result in adverse effects to EFH.

The trigger for EFH consultation with NOAA NMFS is a Federal Agency determination that an action may adversely affect EFH (NOAA Fisheries 2004). As the analysis indicates, the proposed actions of Projects 1 and 2 do not rise to the level of adverse effects. Consultation with NOAA NMFS on EFH is not necessary for these projects.

3.2.5 Wildlife

(IDT Reports incorporated by reference: Biological Evaluation pp. 1-11)

Affected Environment

Common to all project areas

The landscape at the subwatershed scale is primarily a checkerboard of federal and private forest lands. Wildlife habitat on private lands within and adjacent to the six projects can be characterized as a patchwork of early (0-39 years) and mid-seral (40-79 years) conifer forest stands. Early and mid-seral forests in the Coast Range of Oregon are currently dominated by Douglas-fir with some scattered and clumped western hemlock and various hardwoods. BLM forest habitat conditions in the Upper South Fork Alsea subwatershed are dominated by mid-seral forest stands with scattered patches of early-seral, late-seral, and old-growth stands. Patch size and density in both subwatersheds range from approximately 5 to 320 acres and 1 to 15 per section.

Threatened, Endangered, and Special Status Species or Habitats

There are no known special habitats (cliffs, caves, talus, wet/dry meadows, lakes, ponds etc.) in or adjacent to any of the six projects.

Habitat Components

Habitat components most important to wildlife in the conifer forests of the Oregon Coast Range are the larger diameter (greater than 24 inches DBHOB) live and dead trees. Open-grown green trees with the greatest live crowns or with deformities (ie. broken, multiple or dead tops) provide the most complex structure, and meet more wildlife needs than the average tree in the stand. Larger diameter dead trees, both snags and CWD, especially those with the hardest wood (least decayed) would, over time, meet the needs of more wildlife species than dead trees with smaller and softer wood.

These special habitat components are commonly described as legacy or remnant structure. This complex structural component makes for a healthier functioning forest ecosystem. Remnant structure, both live and dead, is uncommon in the early and mid-seral stands within the project area. The units to be thinned in Project 1 have some hard snags and CWD but they are in the smaller diameter classes typical of managed mid-seral forests (see Table 8).

Northern Spotted Owl

Projects 1-3 are within northern spotted owl designated critical habitat except for parts of Units 14A and 14B and the selected stream reach of Project 4 in Section 19 of Township 14 South, Range 6 West. The mid-seral forest stands within Project 1 (Units 14A, 23A-C, 23E and 23G) and the mid and late-seral stands within Project 3 provide dispersal habitat for owls. The late-seral stands in Project 3 also provide suitable nesting habitat for owls. Suitable habitat also occurs adjacent to Projects 1-4. The closest known owl activity is about 1.2 miles to the west of Section 23 of Township 14 South, Range 7 West, and immediately adjacent to a stream reach proposed for log placement to improve fish habitat (Project 4).

Marbled Murrelet

Projects 1-4 are within marbled murrelet designated critical habitat except for parts of Units 14A and 14B and the selected stream reach in Section 19 of Township 14 South, Range 6 West. Suitable habitat occurs adjacent to Projects 1, 2, and 4, and within the selected late-seral stands of Project 3. The closest known occupied marbled murrelet site is over three miles to the west of the project areas.

Mollusks
There are five Bureau Sensitive mollusks, (three slugs and two snails), which may occur within the Marys Peak Resource Area (MPRA), but have not been found since mollusk surveys began in 1997. These mollusks are not suspected to occur within the project area, however, surveys were completed and no listed mollusks were found.

The evening fieldslug is suspected to occur within the MPRA but has never been found. The slug is closely associated with SPZs and standing water.

Red Tree Vole
Red tree vole suitable habitat occurs within the late-seral stands of Project 3. Surveys would be conducted when trees are selected for snag/CWD creation and large tree release.

Table 8
Coarse Woody Debris Conditions within the Yamaha LSR Enhancement Project 1 Area

Unit	CWD (Cubic Ft/Ac.)			Snags greater than 10"(DBHOB) & greater than 10' (Height)	
	All Tree Species	Conifer Only	ROD DC 1&2	Snags/ Acre	Average DBHOB (Inches)
14A	647	643	115	14	19
14B	454	454	0	0	0
23A	121	121	0	8	20
23B	310	310	25	7	13
23C	198	198	0	13	12
23D	555	555	0	0	0
23E	103	103	0	5	19
23G	121	121	0	8	20
23H	123	123	0	0	0

Environmental Effects

Common to Projects 1 and 2

3.2.5.1 Alternative 1 (No Action)

Under the No Action Alternative the uniform, single layered, early, and mid-seral stands of Projects 1 and 2 would continue to grow and develop into late-seral size and structure at a slower rate then if released through density management. There would be no impacts to the early and mid-seral dependent wildlife species currently using these stands for nesting, foraging, dispersal, resting, and escape habitat. The anticipated benefits to future conditions of late-seral forest habitat

in this project area would not be achieved; species dependent on larger and more complex structure would avoid these stands for a longer period of time.

3.2.5.2 Alternative 2 (Proposed Action)

Common to all projects

Effects to Wildlife Habitats

At the subwatershed (sixth field) landscape level, Projects 1 and 2 are surrounded by private lands which are managed for timber production. These private forests provide a continuous source of early and mid-seral habitat that is relatively simple in composition and structure when compared to young unmanaged stands. The proposed density management treatments of Projects 1 and 2 are designed to accelerate the structural development of these stands. These actions would have long-term positive impacts for species dependent on interior late-seral forest habitat in the subwatersheds by creating larger blocks in less time.

At the stand level, the density management prescriptions for Project 1 would remove the suppressed, intermediate, and smaller co-dominant Douglas-fir and leave the dominant and larger co-dominant conifers. Post-treatment densities would range from approximately 38 to 94 trees per acre. Since the largest trees with the best crown ratios would be left, the post-treatment crown canopy is expected to be 50percent or greater over most of the project area. The most substantial short-term impacts, lasting about ten years, would be a simplification of overstory stand structure. This is due to the removal of green trees along with an increase in complexity and diversity in the understory structure due to an increase in light penetration. Since there is an abundance of early and mid-seral habitat in the watershed any; short-term negative impacts to species dependent upon these types is expected to be insignificant.

Effects to Wildlife Species of Concern

Northern Spotted Owl

Most of Projects 1 and 4 and all of Projects 2 and 3 are within designated critical habitat. These actions would degrade critical habitat but they are not expected to modify the functioning of these stands as critical habitat. Owl surveys (ongoing demographic study) have determined that there are no active owl sites that would be impacted by Projects 1-3 and 5-6. Projects 2, 5 and 6 are expected to have no effect on spotted owl habitat. Project 1 would degrade dispersal habitat but the stands are still expected to function as dispersal habitat after treatment. The long-term impact of density management on owl habitat would be positive as it would develop into suitable nesting/foraging/roosting habitat sooner then if left untreated.

Marbled Murrelet

Treatment of the early-seral non-suitable habitat in Project 2 and the mid-seral non-suitable habitat in Project 1 would have long-term positive effects by accelerating the time it would take for these stands to develop into suitable nesting habitat.

Mollusks

Fall surveys were completed in 2006 and Spring surveys were completed in 2007 with no detections of any listed mollusks.

3.2.6 Fuels/Air Quality

(IDT Reports incorporated by reference: Yamaha *LSR Enhancement Project Proposal Fuels Report pp. 1-10)*

Affected Environment

Dead fuel loading in the timber stands is estimated to be 5-25 tons per acre. Much of the existing down material is rotten or only partially sound. Fuels are shaded by forest canopy.

Units are oriented primarily to the southwest and west and to a lesser extent, in an easterly direction. Approximately 40percent of the treatment area has slopes under 35percent. The remaining area has slopes ranging from 35percent up to 60percent. There are improved gravel roads accessing the proposed units.

Environmental Effects

3.2.6.1 Alternative 1 (No Action)

There would be no change from the current conditions for the fuels resource. Conditions would remain as they are at present. No changes in surface area of disturbed fuel loadings are expected.

3.2.6.2 Alternative 2 (Proposed Action)

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 10-20 tons per acre of dead fuel to the thinned areas. It is expected that half of the dead fuel tonnage to be left on site following treatment would be in the form of down logs and pieces in the 10 inch and larger size class.

Risk of a fire start in the untreated slash would be greatest during the first season following cutting. Fire risk along the roads would be reduced when slash concentrations are piled and burned. Risk would decline substantially within 1-3 years following harvest as needles and twigs detach and break down. Green up and increasing growth of understory vegetation would combine with decomposition of the slash to continue the decline in fire risk back to pre-harvest levels in approximately 15 years following harvest.

Increasing the spacing between the tree crowns would have the beneficial result of decreasing the potential for crown fire occurrence in the treated stands. Conversely, if a fire started under dry, summer or early fall conditions during the first year following treatments, the increased slash loading in the thinned stands would likely result in high mortality from scorch.

Air Quality

Burning approximately 575 tons of dry, cured, piled fuels under favorable atmospheric conditions in the Oregon Coast Range is not expected to result in any long-term negative effects to air quality in the air shed. Generally, once covered, dry piles have been ignited, fire intensity builds rapidly to a point where the fuels burn cleanly and very little smoke is produced. Depending on size, arrangement, type and moisture content of the fuels, the smoke would diminish over several hours or days as the piles cool and burn out (sooner if rain develops). Generally this smoke only affects the immediate area (¼ mile or less) around the pile.

If a temperature inversion develops over the area during the night time hours, smoke may be trapped under the inversion and accumulate resulting in a short-term impact to the local air quality. The accumulated smoke generally clears out by mid-morning as the inversion lifts. Due to the location of the project it is unlikely that inversions would present a problem.

Burning of slash would be coordinated with Oregon Department of Forestry in accordance with the Oregon State Smoke Management Plan to prevent negative impacts to local and regional air sheds.

3.2.7 Recreation/Visual Resources

(IDT Reports incorporated by reference: Recreation/Rural Interface/VRM Report pp. 1-9)

Affected Environment

Common to all projects

Recreation

The project setting is characterized by a forest and river setting and accessed by gravel forest and paved roads. Evidence of man-made modifications (roads, trails, timber harvest) is common on both private and public lands in surrounding areas. This area is extensively used by outdoor enthusiasts year round and by recreation users during the months of May through October. Activities that may occur in the area include camping, picnicking, hiking, biking, horse riding, hunting, target shooting, driving for pleasure, and special forest product harvest. The project area lands are open to OHV use. There are little used OHV trails located within the project area. The paved South Fork Alsea Access Road which is a designated National Back Country Byway, accesses the project area is an alternate route for travelers to the Oregon Coast by connecting the Willamette Valley to Highway 34. Vehicle use of the South Fork Alsea Access Road increases during the months of May through October.

Alsea Falls Recreation Area is located within three miles of all six proposed projects in Township 14 South, Range 7 West, Section 25 to the east of Alsea Falls. This recreation area has an extensive trail system, campsites, picnic sites, restrooms, water treatment building and an administrative shop. The trails to the north and south along the South Fork Alsea River are primary links in the Alsea Falls' trail system connecting the campground and picnic areas. The South Fork Mile Trail located north of the river links the campground to Road 14-6-9. Recreation use concentrations range from low to high depending on the weather and season. Maximum use occurs on summer weekends and holidays. Approximately 25,000 visitor days occur per year within the recreation site.

McBee Campground is located in Township 14 South, Range 7 West, Section 26 adjacent to the South Fork Alsea Access Road on Road 14-7-23.2. This is a private primitive campground that is open year round with reservations. The Green Peak Trail is located at the north end of the campground and heads to Green Peak Falls located to the east of Road 14-6-17. This trail is primitive and receives very little maintenance or use.

Visual Resource Management (VRM)
The intermixed land ownership pattern between public and private forest land in the vicinity of the proposed projects greatly limits the BLM's ability to manage this area as a contiguous viewshed. Timber harvest activities near or adjacent to the project are observable from private and public lands and roads including the South Fork Alsea Access Road. Green Peak Falls is visible from Road 14-6-17 and the road grade is visible from the falls and trail.

Projects 1, 3, and 4 in Township 14 South, Range 7 West, Sections 21, 23, 25, 26 and 36 are in the VRM Class 2 corridor of the South Fork Alsea Access Road. As stated in the RMP (p. 37), the level of change to the characteristic landscape within VRM Class 2 should be low (landscape alterations caused by management activities may be seen but should not attract attention of the casual observer, and scenic quality should be retained). Timber harvesting is allowed in VRM 2 areas, but at a rate less than full potential.

Projects 1, 2, 3, 4, 5 and 6 in Township 14 South, Range 7 West, Sections 13, 14, 15, 21, 23, 24, 25, 26 and 36 and Township 14 South, Range 6 West, Section 19 occur in VRM 4. The level of change to the characteristic landscape can be high. The objective is to allow management activities which require major modification of the existing character of the landscape. Activities may dominate the view and may be the focus of viewer attention.

Environmental Effects

3.2.7.1 Alternative 1 (No Action)

With the exception of unexpected changes (i.e. wildfire or disease), the project area would continue to provide a forest and river setting for Alsea Falls recreation users, dispersed recreational activities and local residents. A short-term increase in truck traffic, noise and other inconveniences related to the projects would not occur. However, these inconveniences from other lands in the vicinity would most likely continue. No modifications to the landscape character of the project area would be expected to occur. Modifications to the landscape character in the area around the projects would still be expected, as a result of activities on other lands.

3.2.7.2 Alternative 2 (Proposed Action)

Recreation
Current recreation use of the project area would be restricted in the short-term during operations and expected to remain constant upon completion. Implementation of the project would obliterate OHV trails located in Township 14 South, Range 7 West, Sections 14 and 23 that get little use. Closing these trails may shift use to other areas that may have sensitive resources. Ground based yarding could increase opportunities for additional OHV riding if skid trails are cleared.

The haul route would incorporate the South Fork Alsea Access Road. This additional traffic on the road is a minor concern, since the South Fork Alsea Access Road is wide enough to accommodate two larger vehicles passing. During hauling operations, the South Fork Alsea Access Road has the potential to have high volume of truck traffic and recreational travelers with varying sizes and shapes of vehicles especially during summer months.

Visual Resources
The proposed project would comply with VRM 2 and 4 management objectives. Most of the disturbance would be associated with modifications to vegetation and ground disturbance. A forest setting and most of the canopy would remain. Short-term disturbance would be observable

when directly adjacent to the units and by driving the South Fork Alsea Access Road. Portions of the project are observable from the South Fork Alsea Access Road but the forest blocks much of the project view from surrounding observation points. Evidence of the project would be less observable within five years as understory vegetation returns to a more natural appearance and the remaining stand continues to mature. Unit 23B located near the South Fork Alsea Access Road is in VRM 2. Stumps left after harvest would be visible from the South Fork Alsea Access Road until surrounding vegetation spreads.

There would also be some short-term decline in visual quality as a result of the smoke created while burning of debris/slash piles.

4.0 PROJECT 2 – YOUNG STAND ENHANCEMENT

4.1 Purpose of and Need for Action

The proposed project area consists of a 20-year-old dense stand (367 TPA) of evenly spaced conifers and is located adjacent to Project 1. Project 2 (see EA Map #3) would implement variable density thinning through the use of a diameter limit guideline. The purpose of the proposed project is to promote future late successional forest conditions. This is done by increasing stand and species diversity and to provide more light, water and nutrients to accelerate growth of selected conifers. There is a need to reduce stand densities using variable spaced thinning and to treat fuels resulting from density management activities. The project would be implemented generally within the same time period as Project 1.

4.2 Alternative Development

Pursuant to Section 102 (2) (E) of NEPA (National Environmental Policy Act of 1969, as amended), Federal agencies shall "Study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources." No unresolved conflicts were identified. Therefore, this EA will analyze the effects of the Proposed Action and No Action.

4.3 Proposed Action

Project 2 (see EA Maps) would implement variable density thinning through the use of a diameter limit guideline on approximately 23 acres of a 20 year old stand. To promote future late-successional forest conditions, approximately 50percent of the basal area would be cut with the potential for some of the material being economically marketable and thus being removed from the site. For environmental effects analysis, skyline yarding of a portion of the material and the hand/machine piling of the remaining portion of the material within openings and along roads will be analyzed in the EA. Patch openings of up to 0.25 acre would result. The open areas would be planted with conifer species (most likely western red cedar and western hemlock).

Due to the heavy density management (50percent removal) that would occur and the need to underplant within the openings, some form of slash treatment would be needed. The following treatments could include: Cutting holes in the slash, yarding a portion of the material to landings and separating merchantable from un-merchantable using mechanized processors, or lopping and scattering.

Stream protection zones would be left on each side of the streams and wetland areas as described in Project 1.

This implementation would be accomplished through a timber sale that can be successfully offered to the market place. The timber would be hauled on many of the same roads included within Project 1.

4.4 No Action Alternative

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

4.5 PROJECT 2: COMPARISON OF ALTERNATIVES WITH REGARD TO PURPOSE AND NEED

Table 9 Comparison of Alternatives by Purpose and Need

Purpose and Need (EA Section 4.1)	No Action (Alternative 1)	Proposed Action
Provide more light, water and nutrients to accelerate growth of selected conifers, and promote species and structural diversity. The purpose of the variable spacing objective is to reach late-successional forest conditions (large snags, abundant down logs, and complex forest canopies) sooner then if left untreated.	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. Increases species diversity and understory regeneration, shrubs, forbs etc.

4.6 Affected Environment and Environmental Effects

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

4.6.1 Vegetation

(IDT Reports incorporated by reference: Botanical Report Yamaha pp. 1-12 and Yamaha Silvicultural Prescription and Riparian Report pp. 1-25)

Affected Environment

The proposed project area was clearcut harvested in 1985. The shrub and forb layers are mostly Oregon grape, salal and sword-fern. Coarse woody debris is non-existent. Other than small isolated pockets of *phellinus*, there is no significant disease in this stand. The canopy is closing with low tree crown ratios.

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
This project occurs in a young stand that is generally considered non-habitat for any botanical or fungal threatened or endangered or special status species. There are no known sites of any T&E or Bureau special status vascular plant, lichen, bryophyte, or fungi species.

Noxious Weeds
The same noxious weeds occur within this project area as listed in Project 1.

Environmental Effects

4.6.1.1 Alternative 1 (No Action)

The dense stand of conifers would remain a 'closed stand' for several decades. Eventually suppressed and co-dominant conifers would die. This would create openings in the canopy and would allow for greater diversity in the understory, shrub and forb layers as light levels increased. The diversity and density of the understory, shrub and forb layers would remain low until canopy openings are created naturally.

4.6.1.2 Alternative 2 (Proposed Action)

The young conifers in the project area would be thinned as described in the Proposed Action. Density management of the dense conifer stand would increase growth rates of the reserved trees and allow for development of understory, shrub and forb layers.

Threatened/Endangered and Special Status Botanical and Fungal Species
This project would not directly affect any federal or Oregon state T&E or bureau special status or special attention vascular plant, lichen, bryophyte or fungi species since there are no known sites within the project area or adjacent to the project.

Noxious Weeds
Because the project would likely involve the removal of small (5"-8" DBHOB) trees, any exposed mineral soil from the implementation of this project would likely be minimal or non-measurable. Subsequently, grass seeding would not be necessary to reduce the likelihood of an increase of noxious weeds.

4.6.2 Soils

(IDT Reports incorporated by reference: Soils Environmental Assessment for the Proposed Yamaha Projects Report pp.1-15)

Affected Environment

Project 2 would occur in similar soil conditions as those described for Project 1 (EA Section 3.2.2).

Environmental Effects

4.6.2.1 Alternative 1 (No Action)

The No Action Alternative would result in the continuation of current conditions and trends as described in the Affected Environment.

4.6.2.2 Alternative 2 (Proposed Action)

Compaction and disturbance/displacement of soil

In skyline yarding areas, impacts usually consist of light compaction of a narrow strip less than four feet in width (the skyline road). This is especially true for density management of second growth stands where logs are relatively small and there would be adequate slash on the ground in the corridors to yard over. The maximum area affected would be approximately 0.69 acres (3 percent of 23 acres).

Log landing construction and use would compact the soil and displace top soil at the site. However, about half of the surface area used for landings would be the existing road surface (which is already compacted). The additional area adjacent to roads that would be needed for landing area is estimated to be less than 1percent of the total project area (less than 0.23 acres). 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.

Soil disturbance/displacement and compaction from all sources would be local to the site of disturbance and would not affect soil resources on a watershed or landscape scale. The soil physical, chemical and biological recovery to pre-disturbance levels would begin as soon as the source of the disturbance ends. For the proposed project, the total (new and existing) area of compacted surfaces would not exceed the district guideline to "limit areal (sic) extent of skid roads plus landings to less than 10percent of the unit" (2.3 acres) in the Salem District RMP (Appendix C, Ground Based Yarding).

Site Productivity

For skyline yarding systems, measurable long-term effects on site productivity from light compaction on approximately five acres would be minimal to none. The effect on overall site productivity from light compaction is expected to be low (no expected measurable reduction in overall yield for the project area).

Mass Wasting: Areas with potential for slope instability and mass wasting were identified during field work for the project proposal. All proposed treatment units are outside of any areas mapped as unstable or prone to mass wasting. Tree removal is not proposed on steep, unstable slopes where the potential for mass wasting adjacent to stream reaches is high. Therefore, increases in sediment delivery to streams due to mass wasting induced by loss of root strength are unlikely to result from this action. In addition, the minimal levels of surface disturbance under this proposal would be unlikely to result in the concentration of runoff on mass wasting susceptible slopes.

Surface Erosion: In Project 2, surface erosion is unlikely to be more than a fraction of the "worst case scenario" results from Project 1. Slope gradient is lower, trees are smaller and higher slash levels protecting soil surfaces would serve to protect this site from heavy rainfall and

erosion. Therefore, the rate of surface soil erosion under this proposal is unlikely to have any long-term deleterious effect on soil productivity.

4.6.3 Water

(IDT Reports incorporated by reference: Hydrology/Channels/Water Quality Addendum for Yamaha Project pp.1-16)

Affected Environment

Project 2 would occur in similar hydrologic conditions as those described for Project 1 (EA Section 3.2.3).

Environmental Effects

4.6.3.1 Alternative 1 (No Action)

Under this alternative the existing water quality conditions, stream flows, and channel conditions at the project site would continue their current trends.

4.6.3.2 Alternative 2 (Proposed Action)

For a full discussion of the effects from the felling and removal of trees in this area see the previous discussion under Project 1. In all cases effects would be similar to but less than those discussed in that portion of the document.

The felling and removal of approximately 50percent of the basal area would be unlikely to have any detectable effect on stream flows, surface or groundwater hydrology, or water quality. This is because the residual stand would quickly fill in both canopy gaps and below ground in the root zone. Small disturbances to the soil surface (compaction/displacement) from foot traffic and removal or repositioning of some material would occur during project operations. These effects could result in local erosion but this would be unlikely to reach stream channels or affect turbidity or fine sediment transport in streams because SPZs would be left along channels. These same SPZs would prevent any increase in stream temperature as a result of reductions in shade along perennial streams.

4.6.4 Fisheries/Aquatic Habitat

(IDT Reports incorporated by reference: Yamaha Fisheries Report pp. 1-20)

Affected Environment

See affected environment for Project 1 (EA Section 3.2.4)

Environmental Effects

4.6.4.1 Alternative 1 (No Action)

Current young stand conditions would be maintained. Expected benefits of thinning riparian stands would not be realized. Impacts to aquatic habitat would be unlikely with the implementation of the no-action alternative.

4.6.4.2 Alternative 2 (Proposed Action)

The proposed treatment of 23 acres would affect less than 0.02 percent of the 81,359 acre Upper Alsea Watershed. The Hydrology Report did not suggest any changes in peak or base flows

would occur due to the proposed Project 2, combined with the Project 1 hydrology analysis and cumulative effects analysis (Hawe 2007). As the scale of the proposed project is very small in the watershed and the hydrology analysis did not indicate any potential changes to peak or base flows no changes to aquatic habitat duration or quality downstream would be anticipated.

Erosion effects of falling/yarding trees from this project area would have similar, though lesser effects, to those impacts discussed under Project 1. The smaller size of material proposed for yarding to a landing would be expected to have lesser impacts on surface compaction and sediment transport than the older, larger and heavier timber assessed in Project 1. Sensitive soils were avoided in project layout. The only stream inception points of the project area are located near the bottom of the stand. As this project is believed to have lesser sediment impacts than Project 1, and only a short reach of stream exists in the project area which would still have a SPZ, the probability of sediment transmission impairing fish habitat downstream is considered highly unlikely.

The smaller height of the trees in the project would reduce the calculated width of the primary shade zone. The proposed project would incorporate a 50-foot SPZ consistent with Project 1, which would be greater than the primary shade zone width. Thus, the primary shade zone existing shade levels would be protected. The proposed project would retain 50 percent of the stand outside the SPZs following treatment. The secondary shade zone would include a portion of the SPZ and a portion of the treatment area. The combined affect would likely maintain 50 percent canopy following treatment in the secondary shade zone and would be unlikely to influence stream temperatures in the small reach of stream affected by the proposed action.

The project area is currently devoid of any trees of adequate size that could meet the LWD criteria of 24 inch diameter at breast height, thus no direct effects to LWD recruitment are anticipated. The proposed action would accelerate the growth rates of the remaining trees thus allowing them to reach LWD sizes sooner than if left untreated. Retention of trees in the 50 foot SPZ would more than adequately protect the existing recruitment potential of CWD to the stream channel.

The proposed hauling would likely occur concurrently with proposed Project 1 and any impacts would be expected to be cumulative with Project 1 effects. The total numbers of log trucks utilizing roads would increase slightly with the additional removal of small logs from the 23-acre treatment area. As impacts to aquatic habitat were considered unlikely from hauling for Project 1, impacts from the small increase in traffic due to Project 2 activities would also be considered unlikely to affect aquatic habitat downstream from the haul route.

4.6.5 Wildlife

(IDT Reports incorporated by reference: Biological Evaluation pp. 1-11)

Affected Environment

See Affected Environment for Project 1 (EA Section 3.2.5)

Environmental Effects

4.6.5.1 Alternative 1 (No Action)

Under the No Action Alternative, the uniform, single layered, early seral stand would continue to grow and develop into late-seral size and structure at a slower rate then if released through density

management. There would be no impacts to the early-seral dependent wildlife species currently using this stand for nesting, foraging, dispersal, resting, and escape habitat. The anticipated benefits to future conditions of late-seral forest habitat in this project area would not be achieved. Species dependent on larger and more complex structure would avoid this stand for a longer period of time.

4.6.5.2 Alternative 2 (Proposed Action)

See Environmental Effects for Project 1 (EA Section 3.2.5)

4.6.6 Fuels/Air Quality

(IDT Reports incorporated by reference: Yamaha LSR Enhancement Project Proposal Fuels Report pp. 1-10)

Affected Environment

The area is occupied by a 20-year old Douglas-fir plantation. Undergrowth is a light growth of: salal, vine maple, sword fern, bracken fern, and red huckleberry. Undergrowth is minimal or absent in densely stocked areas and moderately heavy within openings in the trees. There is a scattered, light accumulation of dead woody material on the ground. Larger downed logs are fairly scarce, large snags are absent.

Fuel loading varies from 1-8 tons per acre. Much of the existing down material is rotten or only partially sound. The proposed treatment unit has a predominant aspect of southeast. The slopes in the proposed treatment area are 35-50 percent.

Environmental Effects

4.6.6.1 Alternative 1 (No Action)

With a No Action Alternative there would be no change from the current conditions for the fuels or air quality resources. Conditions would remain as they are at present. No changes in surface area of increased fuel loadings. No burning would occur.

4.6.6.2 Alternative 2 (Proposed Action)

Fuels

The proposed project would result in an increase in fine and medium size slash throughout the unit. Fuel loading, risk of a fire start and the resistance to control a fire, would all increase at the site as a result of the proposed action. Slash created from the density management would add an estimated 7-10 tons per acre of dead fuel to the thinned area.

Logs over 5 inches in diameter would be yarded and removed from the site. Slash within 50 feet of the road would be hand piled, covered with polyethylene plastic and burned. Slash in the remainder of the unit may be piled and burned or areas may be spot treated by hand clearing of planting spots with the remaining slash left in place to decompose over time. Spot treatment may also be done by burning slash concentrations. The decision to spot treat or leave the majority of the slash untreated under this proposed action would be made after the unit has been thinned.

If fuels are left untreated, fire risk would diminish over time as the area "greens up" with understory vegetation, and as the fine twigs and branches in the slash begin to break down and collect on the soil surface. Risk of a fire start in the untreated slash would be greatest during the

first dry season following cutting. In approximately 15 years, the untreated slash would decompose to a point where it no longer contributes substantially to increased fire risk or resistance to control.

Air Quality
Burning approximately 110 tons of dry, cured, piled fuels under favorable atmospheric conditions in the coast range is not expected to result in any long-term negative effects to the air quality in the air shed. Piles should burn up within a few hours and out by the following day. Locally within ¼ mile of the piles there may be some very short-term smoke impacts after piles are ignited resulting from drift smoke. All burning would be done in compliance with the Oregon Smoke Management Plan.

4.6.7 Recreation/Rural Interface/Visual Resources

(IDT Reports incorporated by reference: Recreation/Rural Interface/VRM Report pp. 1-9)

Affected Environment

The affected environment is described in Project 1, Section 3.2.7.

Environmental Effects

4.6.7.1 Alternative 1 (No Action)

Environmental effects for the No Action Alternative are described in Section 3.2.7.

4.6.7.2 Alternative 2 (Proposed Action)

Visual Resources
Changes to the landscape are expected to be moderate and comply with VRM Class 4 management objectives. No part of the project is observable from major public travel routes, recreation areas, or other key observation points. The forest blocks the project view from surrounding public roads.

5.0 PROJECT 3 – SNAG/CWD CREATION & LARGE TREE RELEASE

5.1 Purpose of and Need for Action

Several areas were considered for density management, but were excluded from Project 1. This is because the areas were determined to be unfeasible for harvest activities or the age of these LSR stands were greater than 80 years of age (see EA Map #3).

The purpose of this project is to (1) enhance terrestrial CWD by creation of snags and down logs within forest stands where this structural component is lacking; (2) release the largest trees with the greatest crowns (primarily in the mid-seral stands) that are threatened by canopy encroachment, and (3) provide in-stream log structures for fish-bearing streams where large woody structures are lacking (see Project 4). The proposed project would implement specific management opportunities (ie. provide CWD to support cavity nesting birds) that were identified within the SFAWA (p. 45) and LSRA (p. 67).

There is a need to:

- Cut and top scattered trees adjacent to the largest trees with the largest crowns throughout the project area. Cut trees would be left on site as CWD.
- Create gaps adjacent to the largest trees by cutting trees within a 0.25 acre patch. A portion of the cut trees would remain on site as CWD and any excess CWD could be used for in-stream log structure (Project #4).

5.2 Alternative Development

Pursuant to Section 102 (2) (E) of NEPA (National Environmental Policy Act of 1969, as amended), federal agencies shall "Study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources." No unresolved conflicts were identified. Therefore, this EA will analyze the effects of the Proposed Action and No Action Alternatives.

5.3 Proposed Action

Project 3 has two primary objectives: one is to create large, hard snags and CWD in selected mid-seral and late-seral stands and the other is to maintain complex live-crown structure by releasing the largest trees with the greatest live crowns in those mid-seral stands where logging is unfeasible (see EA Maps). Treatments in late-seral stands would involve the felling and topping of trees for snags and CWD and wherever possible trees to be cut or topped would be adjacent to trees with full live crowns. Treatments in selected mid-seral stands would release the largest trees with the greatest live crowns by the creation of gaps (approximately 0.25 acre) so that this complex crown structure would be released from adjacent tree competition for light and water. Project 3 trees to be cut or topped would not be greater than 36 inches DBHOB. Trees would not be cut within the SPZ (typically within 50 feet of streams). Some felled trees with diameters of 24 to 36 inches could be removed for use in the South Fork Alsea River as fish logs and smaller diameter trees could be used in Peak Creek for the same purpose and need (see Project 4).

5.4 No Action Alternative

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

5.5 PROJECT 3: COMPARISON OF ALTERNATIVES WITH REGARD TO PURPOSE AND NEED

Table 10 Comparison of Alternatives by Purpose and Need

Purpose and Need (EA Section 5.1)	No Action (Alternative 1)	Proposed Action (Alternative 2)
CWD and snags, required for terrestrial wildlife habitat are lacking in the project area watershed as a whole.	Does not meet this purpose and need.	Creates immediate CWD and snags.

5.6 Affected Environment and Environmental Effects

Those elements of the human environment that were determined to be affected are *vegetation, soils, water, fisheries/aquatic habitat, wildlife, fuels and recreation/visual resources*. This section

describes the current condition and trend of those affected elements, and the environmental effects of the alternatives on those elements.

5.6.1 Vegetation

(IDT Reports incorporated by reference: Botanical Report Yamaha pp. 1-12 and Yamaha Silvicultural Prescription and Riparian Report pp. 1-25)

Affected Environment

This project area is adjacent to Project 1 and located in the same forest zone and contains the same common plant associations. Project 3 specific locations have not been identified at this time. The project would occur within a coniferous forest dominated by Douglas-fir with approximate ages of 50 to 120 years.

Threatened/Endangered and Special Status Botanical and Fungal Species
Review of maps and BLM databases reveal there are no known sites of any federal or Oregon state threatened or endangered or any bureau survey and manage or special status botanical or fungal species within the project area.

Noxious Weeds
The same noxious weeds occur within this project area as listed in Project 1.

Environmental Effects

5.6.1.1 Alternative 1 (No Action)

The younger conifers within late seral stands would continue to grow. Down woody debris would accumulate naturally through suppression. No logs would be provided for Project 4.

5.6.1.2 Alternative 2 (Proposed Action)

The project would fall conifers that are located within stands of mid and late seral conifers. The trees to be felled are approximately 50 to 70 year-old Douglas-fir trees. The majority of trees felled would be reserved and allowed to decay on site. Some trees that are located adjacent to roadways and where there is a concern for theft would be moved and may be utilized in the implementation of Project 4.

Threatened/Endangered and Special Status Botanical and Fungal Species
Inventory of the project area for federal and Oregon state threatened and endangered and bureau special status vascular plant, lichen, bryophyte and fungal species has not been conducted on site. Surveys would be conducted in accordance with individual species protocol and in accordance with the 2001 ROD. Surveys would be completed prior to Record of Decision and if any known sites are located, they would be protected according to the 2001 S&M ROD.

Noxious Weeds
Because this project mainly involves the cutting of trees, (minimal possibility of tree removal) any exposed mineral soil from the implementation of this project would be minimal. Since a minimal amount of mineral soil would be exposed and the spread of noxious weeds is predicated on disturbance of mineral soil, the likelihood of the spread of noxious weeds would be minimal.

5.6.2 Soils

(IDT Reports incorporated by reference: Soils Environmental Assessment for the Proposed Yamaha Projects Report pp.1-15)

Affected Environment

Project 3 would occur in similar soil conditions as those described for Project 1 (EA Section 3.2.2).

Environmental Effects

5.6.2.1 Alternative 1 (No Action)

The No Action Alternative would result in a continuation of the soil condition and trends as described for Project 1 (EA Section 3.2.2).

5.6.2.2 Alternative 2 (Proposed Action)

The felling, girdling, or topping of trees as scattered individuals would have no visible or detectable effect on soil physical properties such as bulk density. Over time the material left on site would break down and add to the organic matter content of the soil. This could slightly alter some soil chemical properties (i.e., increased supplies of soil carbon and organic acids). Small disturbances to the soil surface (compaction/displacement) from foot traffic and removal or repositioning of some material would occur during project operations. These effects would be dispersed across the treatment area and would not result in a loss of soil productivity or function.

5.6.3 Water

(IDT Reports incorporated by reference: Hydrology/Channels/Water Quality Addendum for Yamaha Project pp.1-16)

Affected Environment

Project 3 would occur in similar hydrologic conditions as those described for Project 1 (EA Section 3.2.3).

Environmental Effects

5.6.3.1 Alternative 1 (No Action)

Under this alternative the existing water quality conditions, stream flows, and channel conditions at the project site would continue their current trends.

5.6.3.2 Alternative 2 (Proposed Action)

The felling, girdling, or topping of trees as scattered individuals would be unlikely to have any detectable effect on stream flows, surface or groundwater hydrology, or water quality because the residual stand would quickly fill in both canopy gaps and below ground in the root zone. Small disturbances to the soil surface (compaction/displacement) from foot traffic and removal or repositioning of some material would occur during project operations. These effects could result in local erosion but this would be unlikely to reach stream channels or affect turbidity or fine sediment transport in streams because SPZs would be left along channels. These same SPZs

would prevent any increase in stream temperature as a result of reductions in shade along perennial streams.

5.6.4 Fisheries/Aquatic Habitat

(IDT Reports incorporated by reference: Yamaha Fisheries Report pp. 1-20)

Affected Environment

Project 3 would occur in similar habitat conditions as those described for Project 1 (EA Section 3.2.4).

Environmental Effects

5.6.4.1 Alternative 1 (No Action)

Current late-seral stand conditions would be maintained. Expected protection of mature riparian trees through thinning of competing trees adjacent to the mature trees would not be realized. Direct impacts to aquatic habitat would be unlikely as most late-seral sites are located in uplands and almost all treatment sites would be away from fish bearing streams. However, implementing the No-Action Alternative would result in fewer trees available for recruitment associated with the LWD Placement Project (Project 4).

5.6.4.2 Alternative 2 (Proposed Action)

Proposed snag and CWD creation outside of the SPZs would not be expected to have any direct impacts to aquatic habitat. The hydrology analysis did not anticipate any changes to stream flows, surface flows, groundwater, or water quality (Hawe 2007). Minor site-specific soil disturbance may occur, however, the disturbance would be highly unlikely to affect streams. No LWD impacts would be anticipated with the proposed action as LWD and CWD would be retained on site.

Indirect affects to LWD recruitment to intermittent tributaries from large wood source areas within riparian areas of Section 23 could occur. Removal of trees from hillslopes prone to landslides could indirectly negatively affect LWD recruitment to aquatic habitat downstream. Recruitment of LWD to streams could be reduced due to reduced number of trees (potential LWD) on hillslopes in the event of a landslide. Trees targeted for removal would be dispersed over lands with low to moderate levels of landslide risks (BLM 1995). Since removal of trees within areas prone to landslides would not occur, recruitment of LWD would not be directly affected.

Local erosion due to compaction and displacement from falling was determined to be localized with implementation of SPZs (Hawe 2007). The dispersed nature of the tree removal (spread over approximately 370 acres), combined with the undetectable impact on sedimentation strongly suggests that no additive risks to hillside movement would be expected from the proposed action. Since no changes in landslide risks would be expected, no changes in wood recruitment would be expected to occur from proposed tree removal.

5.6.5 Wildlife

(IDT Reports incorporated by reference: Biological Evaluation pp. 1-11)

Affected Environment

The mid and late-seral stands to be treated in Project 3 are lacking in quality and quantity of large dead wood when compared to similarly aged stands of unmanaged forests. The lower live-crowns of large trees, especially in the mid-seral stands, are being naturally pruned due to adjacent tree competition for light and water.

Environmental Effects

5.6.5.1 Alternative 1 (No Action)

It would take much longer for large hard snags and CWD to develop naturally than if created, as proposed in Project 3.

5.6.5.2 Alternative 2 (Proposed Action)

Project 3 is designed to increase the large snag and CWD component in mid and late-seral stands adjacent to Projects 1 and 2. Wherever possible, trees to be cut or topped for snags. The CWD would be adjacent to larger trees with full live crowns so that this complex crown structure would be released from adjacent tree competition for light and water. These actions are expected to have no known negative impacts to stand function. They would have immediate and long-term positive impacts for species which require complex large structure, both live and dead, in the forest environment.

Project 3 trees in late-seral stands selected for snag/CWD creation and large tree release would be surveyed for red tree voles. If any of the trees are found to contain any type of stick nest, the site would be abandoned for a new site without nests. Intense ground surveys around these trees should minimize the impacts to red tree voles.

The late-seral habitat to be treated in Project 3 was surveyed to protocol for murrelets during the 2005 and 2006 breeding seasons and no murrelets were detected. Project 3 may degrade suitable habitat by cutting and topping understory trees. The action would have a positive long-term impact on potential nesting structure at those locations where larger trees with full live crowns would be released. This action is not expected to impact the potential nesting function of the stands.

Project 3 is not expected to impact the nesting/foraging/roosting function of the stands for northern spotted owl. This action would have immediate and long-term positive impacts for owls by improving prey habitat with the addition of large dead wood and by maintaining complex live structure in the stands.

5.6.6 Fuels

(IDT Reports incorporated by reference: Yamaha LSR Enhancement Project Proposal Fuels Report pp. 1-10)

Affected Environment

The proposed project areas to be enhanced with CWD are presently occupied by fairly continuous stands of approximately 50 to 120 year old Douglas-fir timber with a small amount of western hemlock, western red cedar and big leaf maple. There are scattered remnant 100 to 130 year old Douglas-fir trees in some stands. Undergrowth in the timber stands is a light to moderate growth of: salal, vine maple, sword fern, and red huckleberry.

In the timbered areas there is a light to moderate accumulation of dead woody material on the ground. Larger downed logs are fairly scarce as are large snags. Scattered small snags less than 12 inches DBHOB are present. The estimated total dead fuel loading for these stands varies from 5-25 tons per acre. Much of the existing down material is rotten or only partially sound.

Environmental Effects

5.6.6.1 Alternative 1 (No Action)

With a No Action Alternative there would be no change from the current conditions for the fuels resources. No changes in surface area of increased fuel loadings.

5.6.6.2 Alternative 2 (Proposed Action)

Fuel loading, risk of a fire start and the resistance to control a fire, would all increase slightly at the sites. The fuel arrangement would be very discontinuous since only a few trees would be cut in any one contiguous area. Any increased risk of a fire start that does occur in the untreated slash would be greatest during the first season following cutting, the period when needles dry out but remain attached. Fire risk would continue to diminish rapidly in the second and subsequent years as the area greens up with understory vegetation, and as the fine twigs and branches in the slash begin to break off and collect on the soil surface. Within three to five years or less, untreated slash from this proposed action would no longer contribute substantially to increased fire risk or resistance to control. It is estimated that less than five tons of additional fuel per acre would be created from this action.

5.6.7 Recreation/Visual Resources

(IDT Reports incorporated by reference: Yamaha Recreation /Rural Interface/VRM Report)

Affected Environment

The affected environment for the proposed action is described under Project 1, Section 3.2.7.

Environmental Effects

5.6.7.1 Alternative 1 (No Action)

Environmental effects for the No Action Alternative are described in Section 3.2.7.

5.6.7.2 Alternative 2 (Proposed Action)

Recreation

In addition to the environmental effects described under Project 1, the proposed project would create CWD which would leave larger down trees as an obstacle while walking.

Visual Resources

Environmental effects are similar to those described under Project 1, except there would be no burning or debris/slash piles and large trees would be left on site for coarse wood in the stand. The snag and CWD creation would be scattered throughout the project area having a somewhat natural appearance. Limbs would gradually change color as the needles die which should last, at the most, two summers.

6.0 PROJECT 4 – LARGE WOODY DEBRIS PLACEMENT

6.1 Purpose of and Need for Action

The South Fork Alsea River supports populations of winter steelhead, coho, and anadromous and resident cutthroat trout. However, the stream channel currently is deficient in LWD needed for structural habitat diversity. Subsequently, the South Fork Alsea River is specifically identified in the RMP and the LAWA for potential fish enhancement projects (RMP p. 28, LAWA Map 29). In addition, the LAWA provides specific recommendations to provide in-stream large wood structure to reconnect floodplains (pg. 89).

The purpose of Project 4 is to place LWD in a tributary of Peak Creek and within the main stem of South Fork Alsea River. This is so that pools and backwater areas are created that provide slack water refuges during high flows and rearing habitat during the summer. Large woody debris structures would be used to rehabilitate the streams and enhance natural populations of anadromous and resident fish by improving spawning and rearing habitat (RMP p.27)

There is a need to cut trees adjacent to the stream channels or to use excess trees within Project 3 area and place them into the channels using a helicopter(s).

6.2 Alternative Development

Pursuant to Section 102 (2) (E) of NEPA (National Environmental Policy Act of 1969, as amended), federal agencies shall "Study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources." No unresolved conflicts were identified. Therefore, this EA will analyze the effects of the Proposed Action and No Action Alternatives.

6.3 Proposed Action

The project would create log jams, deflector logs and scour logs within the stream channel of the South Fork Alsea River and a tributary of Peak Creek. Map #1 indicates the approximate locations of the structures which would be placed. A few logs would be placed on the South Fork Mile trail to help with erosion and resource issues by elevating the tread.

Trees would be selected from excess Project 3 trees and flown by helicopter and placed in-stream and from timber adjacent to the stream channels. Several smaller diameter trees may need to be incidentally felled to facilitate yarding and transport of the selected trees. Incidentally felled trees that are not of sufficient size for in-stream placement would be left on site as CWD.

Project 4 proposes to use an Incident Command System (ICS) Type I or Type II helicopter to place large trees into five different stream reaches, one on a tributary to Peak Creek, and the other four on the South Fork Alsea River. Log structural stability would be achieved by placing at least two trees in conjunction with each other, each with lengths of at least two times the bankful width. In general, whole tree lengths between 70-170 feet would be incorporated into each structure. All logs would be lifted from the forest floor, flown to instream treatments sites, and placed into the streams with a helicopter, or felled directly into the stream channels from adjacent timber stands. Any felling of stream side trees would be directionally felled away from the South Fork Mile trail and toward the stream to the extent practicable taking care not to damage the recreation trail.

Design Features

To reduce impacts to recreation:

- ✓ During aerial placement of logs within the Alsea Falls Recreation Area and along the South Fork Mile trail follow all Occupational Health and Safety Act laws (require flaggers or temporarily closing the area to recreation) pertaining to crowd control when flying over occupied areas.
- ✓ Place the logs in the picnic area and along the South Fork Mile trail during lower use days. Lower use occurs Monday through Thursday except on holidays and holiday weekends.

To reduce impacts to hydrology:

- ✓ Large woody debris placement could occur at anytime between July 1 and August 31 of any given year.

To reduce impacts to wildlife:

- ✓ Any time or distance restrictions (both horizontal and vertical) must be considered for the flight path from LWD location to LWD placement if the path travels over any suitable owl or murrelet habitat.
- ✓ Any helicopter or chainsaw noise disturbance during the July 1 - August 31 in-stream work period shall not begin until two hours after sunrise and shall end two hours before sunset if within 0.25 mile of occupied or unsurveyed suitable murrelet habitat.

In order to evaluate the noise disturbance/disruption impacts of this action to northern spotted owls and marbled murrelets each selected reach will be identified as follows:

- ✓ **PCT for the reach in the Peak Creek system**. Stream reach PCT has no suitable owl or murrelet nesting habitat within 0.5 mile of the action. LWD placement could occur at any time.
- ✓ **SFA-21 for the reach on the South Fork Alsea River in Section 21**. Stream reach SFA-21 would be surveyed for northern spotted owls on an annual basis. If owls are found to be breeding at the site during the July-August in-stream work period, a Type I helicopter could not be used until after September 30. A Type II helicopter could be used after July 7 without restrictions. If suitable trees are available adjacent to the stream reach for LWD use then chainsaws could be used after July 7 without restrictions. Two years of surveys for northern spotted owls would be required to determine nesting activity.

  Without surveys a Type I helicopter could not be used until after September 15. A Type II helicopter could be used after August 5 with daily time of use restrictions. If suitable trees

are available adjacent to the stream reach for LWD use then chainsaws could be used after August 5 with daily time of use restrictions.

- ✓ **SFA-23 for the reach on the South Fork Alsea River in Section 23**. Stream reach SFA-23 has no restrictions for owls or murrelets so LWD placement could occur at any time during the July 1 to August 31 in-stream work period.
- ✓ **SFA-26 for the reach in Section 26.** Stream reach SFA-26 has murrelet issues. Two years of surveys would be required to clear the area for helicopter use without seasonal restrictions. Without surveys a Type I helicopter could not be used until after September 15. A Type II helicopter could be used after August 5 with daily time of use restrictions. If suitable trees are available adjacent to the stream reach for LWD use then chainsaws could be used after August 5 with daily time of use restrictions.
- ✓ **SFA-36 for the reach in Section 36.** Stream reach SFA-36 has murrelet issues. Two years of surveys would be required to clear the area for helicopter use without seasonal restrictions. Without surveys a Type I helicopter could not be used until after September 15. A Type II helicopter could be used after August 5 with daily time of use restrictions and from July 1 to August 5 beyond 360 feet from suitable habitat. If suitable trees are available adjacent to the stream reach for LWD use then chainsaws could be used after August 5 with daily time of use restrictions.

6.4 No Action Alternative

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

6.5 PROJECT 4: COMPARISON OF ALTERNATIVES WITH REGARD TO PURPOSE AND NEED

Table 11 Comparison of Alternatives by Purpose and Need

Purpose and Need (EA Section 6.1)	No Action (Alternative 1)	Proposed Action (Alternative 2)
There is a need to reestablish or simulate habitat conditions and provide short-term habitat until natural processes can supply the materials needed to recover good stream habitat. Log structures would help to rehabilitate the stream and	The No Action Alternative would not fulfill any of the project objectives, as watershed restoration needs would not be met. South Fork Alsea River and a tributary of Peak Creek would continue to provide poor fish habitat with the potential for conditions to further degrade, as natural recruitment of LWD from the adjacent alder-dominated stands is unlikely.	Creates immediate LWD to the stream channels that would help to restore these parameters and improve habitat conditions for anadromous and resident fish.

enhance natural populations of anadromous and resident fish by improving spawning and rearing habitat.		

6.6 Affected Environment and Environmental Effects

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

6.6.1 Vegetation

(IDT Reports incorporated by reference: Botanical Report Yamaha pp. 1-12 and Yamaha Silvicultural Prescription and Riparian Report pp. 1-25)

Affected Environment

Project 4 occurs within the same project areas as Project 1 and within the western hemlock forest zone. The proposed project areas along riparian areas are mainly dominated by hardwoods (red alder, big leaf maple) but also have portions dominated by conifers. The source of the logs would generally come from conifer dominated upland stands. One source of wood for the implementation of this project would be from the felling of trees from Project 3 and other sources of trees (logs) would be from stands adjacent to the streams.

Threatened/Endangered and Special Status Botanical and Fungal Species

Review of maps and BLM databases reveal there are no known sites of any federal or Oregon state threatened or endangered or any bureau survey and manage or special status botanical or fungal species within the project areas located along Peak Creek and the South Fork Alsea River. Precise location of sources of logs for this project are not known at this time and therefore, cannot determine the presence or absence of any special status species.

Noxious Weeds

The same noxious weeds occur within this project area as listed in Project 1.

Environmental Effects

6.6.1.1 Alternative 1 (No Action)

Trees would not be felled within the western hemlock zone along the South Fork Alsea River or a tributary of Peak Creek. These selected locations within riparian areas would continue to lack large diameter coniferous wood.

6.6.1.2 Alternative 2 (Proposed Action)

Because the location of the specific log placement areas is not known at this time, environmental effects can only be speculated. Conifers would be obtained from Project 3 and from other sources for placement into streams. It is anticipated individual hardwoods which are adjacent to streams

would be felled to facilitate the placement of logs into the streams. Some riparian vegetation would be displaced during the placement of logs into the streams.

Threatened/Endangered and Special Status Botanical and Fungal Species
Inventory of the project area for federal and Oregon state threatened and endangered and bureau special status vascular plant, lichen, bryophyte and fungal species has not been conducted on site. Surveys would be conducted in accordance with individual species protocol and in accordance with the 2001 ROD. Surveys would be completed prior to Record of Decision and if any known sites are located, they would be protected according to the 2001 S&M ROD.

Noxious Weeds
Any exposed mineral soil from the implementation of this project would be minimal. Since a minimal amount of mineral soil would be exposed, the likelihood of the spread of noxious weeds would be negligible.

6.6.2 Soils

(IDT Reports incorporated by reference: Soils Environmental Assessment for the Proposed Yamaha Projects Report pp.1-15)

Affected Environment

Slopes in Project 4 typically range between 0-10percent and seldom exceed 35percent. These soils, such as the Elsie silt loam are deep and flat with a negligible erosion hazard. However, soils near river floodplains are typically moderately to poorly drained, and often subject to high water tables which persist into the late summer. The main limiting factor on these soil types is rutting/displacement hazard which means that care must be taken when utilizing heavy equipment on soil surfaces.

Environmental Effects

6.6.2.1 Alternative 1 (No Action)

The No Action Alternative would result in a continuation of the soil condition and trends as described under the Affected Environment.

6.6.2.2 Alternative 2 (Proposed Action)

Helicopter yarding of trees out of upland areas and placing them in stream channels would result in no change in the amount of current non-forest land and there would be no effect on soil productivity or existing soil physical and chemical processes. There may be some minor bank erosion associated with high flows after wood placement. Erosion rates would likely return to pre-disturbance levels within a year or two.

6.6.3 Water

(IDT Reports incorporated by reference: Hydrology/Channels/Water Quality Addendum for Yamaha Project pp.1-16)

Affected Environment

Project 4 stream reaches are perennial fourth or fifth order channels which meander through unconfined valleys with a well-developed floodplain and periodic sand/pebbles bars. The channels are moderately to deeply incised and have high levels of bank erosion. Channel substrate

is dominated by silt and small gravels and the sediment supply is high at tributary junctions. This wider stream valley has partial to open canopy cover and summer stream temperatures may be high. Peak Creek has been noted for its high input of sediment into the South Fork Alsea River (USDI 1995). Overall, these channels are not properly functioning due to a combination of factors. These include channel incision accompanied by bank erosion and loss of connection to the floodplain, simplification of in-stream habitat, high levels of fine sediment and high stream temperatures in summer.

Project 4 stream channel temperatures exceed the state of Oregon's standard of 17.8º C during portions of most summers. They flow through lower gradient valleys, with partial canopy cover. Based on field and aerial photo observations and past monitoring records, these channels have the potential to be heated by direct solar radiation during the summer months.

Environmental Effects

6.6.3.1 Alternative 1 (No Action)

Under this alternative the existing water quality conditions, stream flows, and channel conditions at the project site would continue their current trends.

6.6.3.2 Alternative 2 (Proposed Action)

During project implementation, increased suspended sediment and turbidity in the creek, in association with minor bank scour, is expected. This increase is likely to be short-term (minutes to hours) and localized (may extend for a short distance, less than 800 meters down the channel). As trees would be placed and left, increases in surface erosion and fine sediment inputs to the channel, from disturbed surfaces adjacent to the channel, would be unlikely.

To mitigate potential increases in bank erosion due to additions of wood, logs would be felled with consideration for bank erosion processes. Attempts would be made to place trees in a manner to direct flows away from unstable banks. The total amount of turbidity and sedimentation resulting from the project would be too small to alter the channel bed load, channel configuration.

Immediately following project implementation, the logs would increase channel complexity. Possible channel responses could include: the formation of small pools, low-velocity zones, areas of aggradation, bank undercutting and channel scour. Actual channel adjustments would be determined primarily by stream flows in the years following project implementation. Channel changes could extend upstream or downstream of the original project site.

During this time, some of the logs could shift from their original positions. Storm events large enough to cause the logs to move downstream at high velocity, or for long distances (more than a few feet) are rare, occurring perhaps once a century or greater. Nevertheless, movement of large debris downstream is a natural and inevitable process and some logs may travel downstream from their original locations.

Effects of the proposed action on stream temperature and dissolved oxygen would be difficult to quantify. Studies have shown that log structures can provide enough shading of the stream's surface to reduce water temperatures; however individually spaced logs would not be expected to have this effect. Over time, increases in the quantity of stored substrates and pools could lead to a

slight decrease in summer stream temperatures. Increases in flow turbulence, as the water passes through, around, or over the logs, could slightly increase dissolved oxygen levels in the tributary.

6.6.4 Fisheries/Aquatic Habitat

(IDT Reports incorporated by reference: Yamaha Fisheries Report pp. 1-20)

Affected Environment

Project 4 would occur in similar conditions as those described for Project 1 (EA Section 3.2.4).

Environmental Effects

6.6.4.1 Alternative 1 (No Action)

Recruitment of LWD to the stream channels would continue at current rates; the existing recruited rate appears to be relatively low. Achievement of ODFWs desirable LWD benchmark would be delayed, potentially for decades, until natural recruitment occurs through mortality of mature stands or recruitment events such as landslides and wind throw. Stream channels typically controlled by LWD structure that are inadequately stocked with wood generally result in simplified channel conditions and accelerated bed movement. Structural complexity provided by LWD increases the variety of habitat for fish across multiple age classes (Cederholm et al 1997). Thus, lack of LWD in the project area streams can be assumed to negatively impact the quality of aquatic habitat for fish.

6.6.4.2 Alternative 2 (Proposed Action)

The placement of LWD through helicopter yarding and felling of timber adjacent to the stream channels would increase the amount of habitat and provide the key elements necessary to maintain that habitat. In-stream work of this type is considered to be beneficial to the habitat and fish populations as they respond to the improved habitat. Habitat surveys conducted on Peak Creek and the South Fork Alsea River including the stream reaches proposed for wood placement were noted as being deficient or moderately stocked in LWD (ODFW 1995; ODFW 1997), indicating that additions of LWD would be expected to benefit stream function. The indirect beneficial effects of the action are anticipated to include improved sorting and routing processes, an increase in the amount of pool habitat, increased access of this stream to its floodplain and greater summer and winter rearing potential for juvenile salmonids within this stream segment.

However indirect short-term negative impacts to fish and aquatic habitat are anticipated. The placement of the wood could mobilize fine sediments locally as a result of local hydraulic changes altering bed and bank scour and deposition. With the use of project design features (PDFs), including working during the ODFW instream work periods and ODFW wood placement guidelines, effects are anticipated to occur only at the site and within a short distance downstream. Sediment movement would be expected to return to background levels within the first winter after project implementation.

Localized effects to LWD recruitment and shade from stream side tree falling may occur. Falling of trees adjacent to South Fork Alsea River would shift the location of material from the stand adjacent to the stream, which has a potential to be recruited, and is converted directly to instream structure. Falling trees from the adjacent stands would reduce the amount of timber potentially available to recruitment at a volume equal to or less than the increase in instream structure. This assumes some tree adjacent to the stream may not fall into the stream if left to natural events. The

overall affects to LWD recruitment from falling adjacent riparian trees into the streams would be neutral to slightly beneficial.

Forest density and hence shading in the riparian zone adjacent to the mainstem South Fork Alsea River would be left unaltered under this proposal. It is anticipated that small holes in the riparian canopy (less than 10 sq.-meters) would occur in the vicinity of trees that are felled. These would be dispersed along both streambanks for over four sections in the South Fork Alsea River. While this has the potential to slightly increase the amount of water surface exposed to direct solar radiation, it is not expected to result in an increase in stream temperatures. This is because the fallen trees would also provide additional shading directly over the channel and riparian canopies would quickly fill in where additional light is available. Over time, increases in the quantity of stored substrates and pools may lead to a slight decrease in summer stream temperatures in the main channel.

Threatened, Endangered, and Special Status Species
Projects 4 and 5 are anticipated to occur in habitat know to be utilized by Chinook and coho salmon. An adverse affect determination was made on EFH. The proposed action would meet the Project Design Criteria established in the *Endangered Species Act Section 7 Formal Programmatic Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for Fish Habitat Restoration Activities in Oregon and Washington, CY2007-CY2012*. Adverse affects to Essential Fish Habitat and application of design features to minimize affects is covered by the above EFH document.

6.6.5 Wildlife

(IDT Reports incorporated by reference: Biological Evaluation pp. 1-11)

Affected Environment

In order to evaluate the noise disturbance/disruption impacts of this action to northern spotted owls and marbled murrelets each selected reach will be identified as follows: PCT for the reach in the Peak Creek system; SFA-21 for the reach on the South Fork Alsea River in Section 21; SFA-23 for the reach on the South Fork Alsea River in Section 23; SFA-26 for the reach in Section 26; and SFA-36 for the reach in Section 36.

Stream reach PCT has no suitable owl or murrelet nesting habitat within 0.5 mile of the action, subsequently, LWD placement could occur at any time during the July 1 to August 31 in-stream work period.

Stream reach SFA-21 has both owl and murrelet issues. During the 2006 breeding season owls were detected in the northeast corner of Section 21. SFA-21 falls completely within unsurveyed suitable marbled murrelet habitat.

Stream reach SFA-26 has murrelet issues (owls cleared by surveys). The selected reach is within unsurveyed old-growth which is suitable murrelet habitat.

Stream reach SFA-36 has murrelet issues (owls cleared by surveys). The selected reach is within unsurveyed old-growth murrelet habitat.

Stream reach SFA-23 has no restrictions for owls or murrelets (cleared by surveys).

Affected environment is the same as for Project 1 (EA Section 3.2.5)

Environmental Effects

6.6.5.1 Alternative 1 (No Action)

The No Action Alternative would result in no change to the affected environment. Short-term disruption of wildlife use patterns would be avoided.

6.6.5.2 Alternative 2 (Proposed Action)

Project 4 would use a helicopter to place logs in stream reaches SFA-21, SFA-26 and SFA-36 after August 5. This action may disturb/disrupt murrelets in adjacent unsurveyed suitable habitat.

Project 4 would use a helicopter to place logs in stream reache SFA-21 after July 7. This action may disturb owls in adjacent suitable habitat.

However, because the project would occur outside of the critical breeding season for spotted owls and marbled murrelets, a may affect not likely to adversely affect determination was made for these species.

6.6.6 Fuels

(IDT Reports incorporated by reference: Yamaha LSR Enhancement Project Proposal Fuels Report pp. 1-10)

Affected Environment

Project 4 involves the stream channels of the South Fork Alsea River and Peak Creek. These stream channels are located among typical coast range riparian topography and vegetation. The over story vegetation adjacent to these streams varies from young Douglas-fir plantations to 100+ year old Douglas-fir timber stands with some western hemlock, western red cedar, red alder and big leaf maple. Undergrowth is a light to heavy growth of: salal, vine maple, sword and bracken fern, and red huckleberry. There are light to moderate accumulations of dead woody material on the ground. Larger downed logs and large snags are present but fairly scarce.

Fuel loading in the streams is minimal. Fuel loading in the adjacent timber stands is based on visual estimates. The estimated total dead fuel loading for these adjacent stands varies from 1-8 tons per acre in the young stands up to 30 tons per acre in the timber. Much of the existing down material is rotten or only partially sound.

Environmental Effects

6.6.6.1 Alternative 1 (No Action)

Current fuel conditions would be maintained.

6.6.6.2 Alternative 2 (Proposed Action)

Effects of the proposed project on fuels would be some minor impact to brush and existing debris in the areas adjacent to the stream where logs are placed. The logs placed in the stream are not generally considered as part of the fuel loading since they would have high moisture content and

be isolated from a surrounding fuel bed. Fuel loading, risk of a fire start and the resistance to control a fire would not be substantially affected by log placement.

6.6.7 Recreation/Visual Resources

(IDT Reports incorporated by reference: Recreation/Rural Interface/VRM Report pp. 1-9)

Affected Environment

The affected environment for the proposed action is described under Project 1, Section 3.2.7

Environmental Effects

6.6.7.1 Alternative 1 (No Action)

The Alsea Falls Recreation Area would continue to be managed as it is currently. The seasonal operation of facilities (mid May to late September) would not change. Year round foot and bicycle access would continue to be allowed on trails. Environmental effects for the No Action Alternative are described in Section 3.2.7.

6.6.7.2 Alternative 2 (Proposed Action)

Recreation

Current recreation use of the project area would be restricted in the short-term during operations and would be expected to return to previous level of use upon completion of project.

The proposed project would have a direct impact on recreation use in Alsea Falls Recreation Area, McBee Campground and along the South Fork Alsea Access Road. The transport of logs would occur during the peak season of use. Temporary closures of a few hours may need to occur for safety precautions. Helicopter noise of a few days would be heard while recreating.

Log placement may lead to fishing opportunities, raise trail tread and possibly protect trails from river erosion. Conversely, logs may cause long-term erosion of hiking trails and recreation sites that exist along the river causing increased site maintenance. A portion of the South Fork Mile trail located in a wet meadow, may need drainage installed or elevated as a result of the rising water table. There is a slight possibility that even with design features and mitigations measures, trees placed in the South Fork Alsea River would raise the water level enough that erosion could occur leading to trail closures and rerouting. Rerouting trails would be costly, using up revenue collected from the campground fees. However, during log placement, attempts would be made to place trees in a manner to direct flows away from unstable banks and at-risk infrastructure. Any increase in erosion or rising of the water table would be short-term and local and would unlikely result in infrastructure damage.

Logs could lead to potential safety hazards from users cutting social trails to the river. However, due to the relatively remote location of the log placement in conjunction with the dispersed nature of recreation use, any increase of safety hazards to the public would be negligible.

Visual Resources

The proposed project is in VRM 2 with the exception of that portion along the Peak Creek tributary. Aesthetics of the area would be altered until natural vegetation returns and trail tread becomes established. Log jams seen by the public could be obtrusive or natural based on their personal preference. Limbs would gradually change color as the needles die which should last, at

the most, two summers. Most of the disturbance would be associated with modifications to the vegetation, ground and river landscapes. There may be some logs in viewing distance of the South Fork Alsea Access Road but the winding road and forest blocks much of the project to just a glimpse. While incidental red alder trees may be felled, a forest and river setting along the trail system would be maintained.

7.0 PROJECT 5 – ROAD 14–7–22 (TROUT CREEK COUNTY ROAD) CULVERT REPLACEMENT

7.1 Purpose of and Need for Action

Two large culverts are preventing fish passage upstream to BLM-managed lands. This project area is in the same vicinity as Project 1 and is located within Trout Creek (tributary of South Fork Alsea River) on private land.

The purpose of the proposed project is to improve habitat conditions for coho salmon, steelhead and cutthroat trout and assist in restoring and improving ecological health of watersheds and aquatic systems by replacing failing culverts and improving fish passage. The replacement of these culverts would also improve storm flow capacity. The proposed project would meet ACS requirements by "reconstructing…drainage features (culverts, etc) that pose a substantial risk" (RMP, p. 62).

There is a need to:

- Replace two culverts on Road 14-7-22 within private land that are acting as a barrier to fish migration upstream to BLM-managed lands. The culverts would be replaced with a countersunk culvert designed to meet 100-year peak flood events and that would provide year round fish passage.

There is no funding available to complete this project; however the project would be considered when funding becomes available.

7.2 Alternative Development

Pursuant to Section 102 (2) (E) of NEPA (National Environmental Policy Act of 1969, as amended), federal agencies shall "Study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources." No unresolved conflicts were identified. Therefore, this EA will analyze the effects of the Proposed Action and No Action Alternatives.

7.3 Proposed Action

Project 5 would remove and replace two 60 inch diameter concrete culverts within an anadromous fish bearing stream (Trout Creek) with one culvert that meets fish passage and 100-year flood criteria.

Project Design Features

1. Existing structures would be replaced with a countersunk culvert designed to meet 100-year peak flood events and hydraulic capacity would compensate for expected deposition in the culvert bottom.

2. Excavated fill material removed during replacement of culverts would be temporarily stored on, or immediately adjacent to, the existing road. Excavated material deemed excess or unsuitable for reuse (waste material) would be end hauled to suitable, stable locations nearby.
3. Waste material would be placed on slopes less than 50 percent and not adjacent to head walls or streams. Waste piles would be sloped with gentle back slopes approximately 2:1. If located in areas where erosion could affect streams, waste piles greater than approx 200 square feet in surface area would be seeded with Oregon Certified (Blue Tagged) red fescue at a rate equal to 40 pounds per acre.
4. Felled trees, slash and cut brush would be removed and disposed of in the following manner:
    - With approval of the Area fisheries biologist, larger material would be placed in adjacent stream channels, left on site, or placed down stream of culvert.
    - Minimal amounts of brush would be scattered on site in the areas away from the road surface, but no accumulations would be created.
    - Accumulated piles of debris would be disposed of by chipping or would be end hauled and deposited at an approved site.
5. To minimize sedimentation downstream of the project site, stream water would be pumped or piped through the construction area.
6. *Guidelines for Salmonid Passage at Stream Crossings* (NMFS SW Region, Sept. 2001) would be followed as well as terms and conditions found in *Endangered Species Act Section 7 Formal consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for U.S. Forest Service and Bureau of land Management Programmatic Activities in Northwestern Oregon,* February 25, 2003.
7. Culvert replacement activities would occur during the summer period with lowest streamflow (July 1 to August 31), and comply with *Oregon Guidelines for Timing of In-water Work to Protect Fish and Wildlife Resources*.
8. The culvert would be designed as a minimum to be as wide as bankful conditions.
9. The culvert would be installed at less than 2percent gradient, and would be countersunk into the streambed to a minimum one-foot depth.
10. Stream banks would be stabilized where necessary using on site logs and boulders.
11. Use of large rock would be minimized and limited to use as scour protection on the road embankment adjacent to the culvert.
12. Power equipment would be refueled at least 200 feet (or as far as possible) from streams, and immobile equipment would have absorbent pads placed to capture any fuel/oil spillage. During periods of non-use equipment would be stored a minimum 200 feet from streams.
13. The road running surface would be re-rocked.
14. All exposed mineral soil areas would be grass seeded with Oregon Certified (Blue Tagged) red fescue (*Festuca rubra*) at a rate equal to 40 pounds per acre, and planted with conifer tree species where appropriate openings exist.
15. The resource area biologist would be notified if any additional sites of federally-listed wildlife species are found occupying stands within 0.25 miles of project areas.
16. If any sites of cultural significance are discovered in the project area, appropriate mitigation measures as described in the Salem District *RMP* would be implemented.

7.4 No Action Alternative

The BLM would not implement the action alternative at this time. The failing culverts would not be replaced and fish passage would not be improved. This alternative serves to set the environmental baseline for comparing effects to the proposed action.

7.5 COMPARISON OF ALTERNATIVES WITH REGARD TO PURPOSE AND NEED

Table 12: Comparison of Alternatives by Purpose and Need

Purpose and Need (EA Section 7.1)	No Action (Alternative 1)	Proposed Action (Alternative 2)
Habitat conditions for coho salmon, steelhead and cutthroat trout would be improved by: replacing culverts that prevent fish from moving upstream and reducing sediment delivery rates to stream channels (ROD/RMP, p. 27). The primary goal of the proposed project is to assist in restoring and improving ecological health of watersheds and aquatic systems by replacing failing culverts and improving fish passage and storm flow capacity.	Restricted access to 1.25 miles of habitat for anadromous species would continue.	Project 5 would remove and replace two 60inch diameter concrete culverts within an anadromous fish bearing stream (Trout Creek) with one 171inch x 110inch arched pipe.

7.6 Affected Environment and Environmental Effects

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

7.6.1 Vegetation

(IDT Reports incorporated by reference: Botanical Report Yamaha pp. 1-12 and Yamaha Silvicultural Prescription and Riparian Report pp. 1-25)

Affected Environment

This project area is in the same vicinity as Project 1 and located in the same forest zone. This project occurs within a right-of-way and within the road maintenance zone on privately owned timber company lands. The right-of-way consists of a mix of hardwoods and conifer trees less than 80 years old. This area has not been surveyed on the ground.

Threatened/Endangered and Special Status Botanical and Fungal Species

Inventory of the project area for federal and Oregon State threatened and endangered and bureau special status vascular plant, lichen, bryophyte and fungal species were accomplished through

literature review of known sites, maps and aerial photos in accordance with the 2004 Record of Decision.

There are no known sites of any T&E or bureau special status vascular plant, lichen, bryophyte or fungi species within the project area nor are any suspected within this project area.

Noxious Weeds
The same noxious weeds occur within this project area as listed in Project 1.

Environmental Effects

7.6.1.1 Alternative 1 (No Action)

The failing culverts on Trout Creek would not be replaced. The existing culverts could fail which could result in an increase in erosion and sedimentation. Noxious weeds could become established on the newly exposed soils.

7.6.1.2 Alternative 2 (Proposed Action)

Culvert replacement involves the removal of any vegetation within the general culvert area to remove the existing culverts and install a new culvert.

Threatened/Endangered and Special Status Botanical and Fungal Species
This project occurs on a roadway and is generally considered non-habitat for any botanical or fungal threatened or endangered or special status species.

Noxious Weeds
Ground disturbance would be limited to the project area and not widespread. Grass seeding would be required to minimize the establishment of any non-native plants.

7.6.2 Soils

(IDT Reports incorporated by reference: Soils Environmental Assessment for the Proposed Yamaha Projects Report pp.1-15)

Affected Environment

Project 5 would occur in similar soil conditions as those described for Project 1 (EA Section 3.2.2). However, since the proposal involves a road surface and stream crossing structure (culvert), natural soil surfaces would not be part of the affected environment. The road surface consists of existing disturbed soils (i.e., portions of surface soil and organic matter removed and remaining soil compacted and augmented with rock from off site sources). The culverts are concrete and the fill material surrounding the culverts are previously disturbed soil from unknown sources.

Environmental Effects

7.6.2.1 Alternative 1 (No Action)

The failing culverts on Trout Creek would not be replaced. The existing culverts could fail which could result in an increase in erosion and sedimentation.

7.6.2.2 Alternative 2 (Proposed Action)

Road improvements would result in no change in the amount of current non-forest land. There would be no effect on soil productivity or existing soil physical and chemical processes. Some encroaching vegetation along these roads would be cut and surface rock would be added where needed. This action would likely improve drainage and road surface conditions, resulting in less road surface erosion into the surrounding area and streams.

The improvement work would be expected to result in some minor short-term roadside erosion. This would most likely occur when the established vegetation in the road fill is removed in affiliation with the culvert removals and installment operations. Litter-fall accumulations and the growth of vegetation generally re-establish within one or two years; erosion rates would be expected to return to very low levels thereafter.

7.6.3 Water

(IDT Reports incorporated by reference: Hydrology/Channels/Water Quality Addendum for Yamaha Project pp.1-16)

Affected Environment

Project 5 would occur in similar hydrologic conditions as those described for Project 1 (EA Section 3.2.3).

Environmental Effects

7.6.3.1 Alternative 1 (No Action)

Under this alternative the existing water quality conditions, stream flows, and channel conditions at the project site would continue their current trends.

7.6.3.2 Alternative 2 (Proposed Action)

The proposed action would be confined to the existing road right-of-way, at a deep through fill of material borrowed from the adjacent roadbed during construction. Based on observation of existing culverts and stream crossings, effects from the replacement of the culverts would be limited to the site of disturbance and unlikely to result in any alterations to channels or floodplains downstream or elsewhere in the watershed. The project would benefit the channel by providing for improved stream flow and passage of sediment, organic materials and aquatic organisms. It would eliminate any chronic erosion and turbidity at this site.

The risk of short-term (during the action and the first winter following) increases in stream turbidity as a result of culvert replacements and disturbance of the fill may contribute to increased turbidity levels directly below the road/stream intersection. These would be maintained below the limits required by the ODEQ.

7.6.4 Fisheries/Aquatic Habitat

(IDT Reports incorporated by reference: Yamaha Fisheries Report pp. 1-20)

Affected Environment

No ODFW aquatic habitat surveys were located to describe the Trout Creek drainage. The majority of the Trout Creek stream course is privately administered. A ¼ mile reach of Trout

Creek flows across BLM lands in Section 15. This reach is approximately one mile upstream from the confluence with South Fork Alsea River. A stream inventory was conducted in 1980 for the BLM reach (House 1980). The applicability of data more than 26 years old to current conditions is unknown. Pool area, width to depth, sediment composition, and shade information was estimated and indicated the habitat was in moderate condition compared to ODFW benchmarks. A wood count was not made during this survey; therefore wood availability can not be determined. Incidental information from the survey, including stand age and passage barriers, suggests the abundance of key wood was likely at moderate stocking levels. The majority of federal lands in the drainage cover the 1st and 2nd order tributaries draining to Trout Creek.

The culvert located in Section 15 on Trout Creek, (approximately ¾ mile upstream from the confluence with the South Fork Alsea River) appears to be acting as a barrier to fish migration due to high water velocity as a result of undersized culvert diameter and excessive slope. Coho distribution includes habitat upstream of the Trout Creek culvert (Streamnet 2005). Based on streamnet distribution, the existing culverts likely block access to over 1.25 miles of spawning and rearing habitat for anadromous salmonids. Cutthroat trout have been documented upstream of the Trout Creek culverts based on ocular surveys. In general, fish species composition upstream of the culverts is assumed to be similar to Upper Peak Creek or Upper South Fork Alsea River above their respective waterfalls.

Environmental Effects

7.6.4.1 Alternative 1 (No Action)

The Trout Creek culvert, proposed for removal/replacement through implementation of this project, would continue to impair aquatic habitat and negatively affect fish passage. Sediment delivery to streams as a result of replacing and removing culverts would not occur. Restricted access to 1.25 miles of habitat for anadromous species would continue. Resident fish gene flow would be limited to downstream transference only. Populations of fish upstream of the culvert would be at risk of elimination due to catastrophic events or degrading conditions in the small watershed area.

7.6.4.2 Alternative 2 (Proposed Action)

Replacement of the existing culverts with a culvert that meets fish passage and 100-year flood criteria is expected to cause short-term negative affects to resident fish and aquatic habitat.

Bed mobility may be locally increased as a result of construction activity in the stream channel loosening stream substrates. Erosion control features, silt fences and bark bags, installed down stream of the construction site in the dewatered reach below the project would minimize turbidity during construction. Upon completion of the project, the reconstructed stream bed would simulate natural substrate characteristics, assuming installation of a pipe arch culvert. Placement of oversized material as part of stream simulation would reduce the risk of increased scour through the pipe and protect upstream bed stability during the first winter freshets. Incorporation of finer sediment into the simulated substrate would accelerate recovery of surface flow through the culvert.

Removing the existing structure and preparing the site for installation would disturb the stream bank, approximately 40-60 feet upstream and downstream of either side of the crossing. Rehabilitating disturbed stream banks by seeding native grasses and vegetation upon completion of the culvert construction would accelerate recovery of riparian vegetation and protect bank

stability. Banks and riparian vegetation disturbed by construction would stabilize after the first winter.

The stream channel would be dewatered via an upstream berm and either pumped or piped to below the project site. Dewatering the project site during construction could limit movement of native fish during project implementation. Dewatering also includes the risk of stranding fish in pools and pocket water thru the dewatered reach. Implementing instream project activities during the ODFW (2000) Instream Work Timing between July 1 and August 31 would minimize the number of fish affected. Salvaging fish within the project reach would further minimize direct impacts to fish present in the project area during construction. Use of a gravity fed system for diverting water around the project site would provide downstream passage opportunities for resident fish. Screening intakes of mechanical pumps, and suspending the intake away from the stream edge, would prevent entrainment of small fish into the pumping system and prevent mortality.

Movement of anadromous salmonids occurs in the Fall thru Spring (adults in the Fall or Spring, and smolts in the Spring). Proposed project timing is not anticipated to negatively affect migrating anadromous salmonids. Resident and over-summering species migrate upstream and downstream thru the project area based on several mechanisms and may move through the project area during the instream work timing. These resident and over-summering fish would be indirectly negatively affected during the proposed dewatering period as project activities would impair natural behavior patterns. The effect would be short-term, one summer, assuming that surface flows would recover to pre-project conditions after the first winter freshets.

Installation of the new crossing would restore access for resident and anadromous salmonids. Streamnet (2005) data suggests that coho and steelhead would be able to reach an additional 1.25 miles of spawning and rearing habitat following restoration. Resident species would be expected to freely move through the project area following project completion. Restoration of access for resident species would increase genetic connectivity of previously isolated upstream populations and reduce extinction risks for the upstream resident populations.

7.6.5 Wildlife

(IDT Reports incorporated by reference: Biological Evaluation pp. 1-11)

Affected Environment

Affected environment is the same as for Project 1 (EA Section 3.2.5)

Environmental Effects

7.6.5.1 Alternative 1 (No Action)

The No Action Alternative would result in no change to the affected environment. Short-term impacts to wildlife species and habitats as described for the proposed action would be avoided.

7.6.5.2 Alternative 2 (Proposed Action)

Project 5 would have no effect on designated owl and murrelet critical habitat.

7.6.6 Fuels/Air Quality

(IDT Reports incorporated by reference: Yamaha LSR Enhancement Project Proposal Fuels Report pp. 1-10)

Affected Environment

Projects 5 and 6 involve the stream channels passing under the affected road right-of-ways. For both of these projects the fuels resource is minimal. The only concern would be effects of the project on the fuels adjacent to the work areas proposed in the projects. Vegetation adjacent to the right-of-way varies from young Douglas-fir plantations to 100+ year old Douglas-fir timber stands with small amounts of western hemlock, western redcedar, red alder and bigleaf maple. Undergrowth is a light to heavy growth of salal, vine maple, sword and bracken fern, and red huckleberry. There are light to moderate accumulations of dead woody material on the ground. Larger downed logs and large snags are present but scattered.

On the land adjacent to the roads affected by this project, fuel loadings vary and are similar to those already described in Projects 1, 2 and 3.

Environmental Effects

7.6.6.1 Alternative 1 (No Action)

There would be no change from the current conditions for the fuels or air quality resources. Conditions would remain as they are at present. No changes in surface area of increased fuel loadings. No burning would occur.

7.6.6.2 Alternative 2 (Proposed Action)

Effects of the proposed project on fuels would have some minor impact to brush and existing debris in the areas adjacent to the stream where culverts are to be replaced. Some brush and small trees may be crushed or torn out as the hydraulic loader removes old pipes and reshapes the stream channels to accept the new pipes. Fuel loading, risk of a fire start and the resistance to control a fire would not be substantially affected by culvert replacement. Any slash created would be minor and can be mitigated on site by scattering, burying or moving off site by end hauling. Any larger accumulations of slash that are end hauled to disposal sites would be piled, covered and burned in the Fall in the same manner as proposed under Project 1. Any large logs that are dug out would be placed in the stream channel for structure or out side of the right-of-way for CWD. Only small size material would be end hauled, scattered or buried.

There is not expected to be any measurable effects on air quality from this project. In the unlikely event that some brush and debris is removed from the site and piled, the volume is expected to be small and of a size and type that would burn cleanly. All burning would be done in compliance with the Oregon Smoke Management Plan.

7.6.7 Recreation/Visual Resources

(IDT Reports incorporated by reference: Recreation/Rural Interface/VRM Report pp. 1-9)

Affected Environment

The affected environment for the proposed action is described under Project 1, Section 3.2.7.

Environmental Effects

7.6.7.1 Alternative 1 (No Action)

Environmental effects for the No Action Alternative are described in Section 3.2.7.

7.6.7.2 Alternative 2 (Proposed Action)

Recreation
This project would have little impact on recreational use but may cause traffic delays along the Trout Creek County Road.

Visual Resources
Changes to the landscape are expected to be moderate and comply with VRM Class 4 management objectives. Most of the disturbance would be associated with modifications to the road right-of-way. No part of the project is observable from major public travel routes, recreation areas, or other key observation points. No special visual features or specific concerns were identified. The forest blocks the project view from surrounding public roads.

8.0 PROJECT 6 – SOUTH MOUNTAIN COUNTY ROAD SURFACE IMPROVEMENT

8.1 Purpose of and Need for Action

Due to extensive OHV use, the South Mountain County Road (see EA Map #2) was identified as a major source of sedimentation adversely affecting Peak Creek and habitat conditions for cutthroat trout. Peak Creek was identified as a high sediment source of input to the South Fork Alsea River (SFAWA p. 73).

The purpose of the proposed project is to assist in restoring and improving ecological health of watersheds and aquatic systems by improving road drainage and infrastructure, reducing erosion run-off and improving water quality. The proposed project would meet ACS requirements by "minimizing sediment delivery to streams from roads" and developing and implementing a Road Management Plan which includes provisions that gives high priority to identifying and correcting road drainage problems that contribute to degrading riparian resources (RMP, p. 63).

There is a need to:

- Retrieve material that has washed off and place material back on the road.
- Install drainage structures.
- Remove brush within the road prism and place crushed rock on approximately 3.9 miles of the road surface.

8.2 Alternative Development

Pursuant to Section 102 (2) (E) of NEPA (National Environmental Policy Act of 1969, as amended), federal agencies shall "Study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources." No unresolved conflicts were identified. Therefore, this EA will analyze the effects of the Proposed Action and No Action Alternatives.

8.3 Proposed Action

Proper drainage would be restored and material would be retrieved that has washed off the road surface and placed back on the South Mountain County Road from milepost 3.90 to milepost 7.41. To remove drainage from the road surface, four ditch and water run-outs would be installed from milepost 3.90 to 4.90 thus eliminating the need for waterbars. In addition, roadside brushing would occur, the entire road surface would be graded, and an approximate six inch depth of crushed rock would be placed. Grass seeding would be required to minimize the establishment of any non-native plants.

8.4 No Action Alternative

The BLM would not improve the road to restore proper drainage at this time. This alternative serves to set the environmental baseline for comparing effects to the proposed action.

8.5 COMPARISON OF ALTERNATIVES WITH REGARD TO PURPOSE AND NEED

Table 13: Comparison of Alternatives by Purpose and Need

Purpose and Need (EA Section 8.1)	No Action (Alternative 1)	Proposed Action (Alternative 2)
Improve road drainage and infrastructure, reducing erosion run-off and improving water quality.	South Mountain County Road would continue to be a major source of sedimentation adversely affecting Peak Creek.	Road drainage and infrastructure would be improved thus reducing erosion run-off and improving water quality.

8.6 Affected Environment and Environmental Effects

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

8.6.1 Vegetation

(IDT Reports incorporated by reference: Botanical Report Yamaha pp. 1-12 and Yamaha Silvicultural Prescription and Riparian Report pp. 1-25)

Affected Environment

This project area is located in the western hemlock forest zone within proximity of Project 1. This project would improve the South Mountain County Road. The majority of this road occurs on privately owned (Weyerhauser Co.) timber company lands. Approximately 75percent of the area

adjacent to the road has recently been clearcut harvested with the remaining 25percent of the area in forests less than 80 years old.

Threatened/Endangered and Special Status Botanical and Fungal Species
Inventory of the project area for federal and Oregon State threatened and endangered and bureau special status vascular plant, lichen, bryophyte and fungal species were accomplished through literature review of known sites, maps and aerial photos in accordance with the 2004 Record of Decision. There are no known sites of any T&E or bureau special status vascular plant, lichen, bryophyte, or fungi species within the project area nor are any suspected within this project area.

Noxious Weeds
The same noxious weeds occur within this project area as listed in Project 1.

Environmental Effects

8.6.1.1 Alternative 1 (No Action)

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

Noxious Weeds:
Without the implementation of the proposed project there would be no human caused disturbances in the proposed project area and the established noxious weed populations would remain low. Weed population may increase in areas were erosion is not controlled.

8.6.1.2 Alternative 2 (Proposed Action)

Brushing the road would remove vegetation within the road right-of-way.

Threatened/Endangered and Special Status Botanical and Fungal Species
This project occurs within an existing roadbed and is generally considered non-habitat for any botanical or fungal threatened or endangered or special status species. This would result in little to no impact.

Noxious Weeds
Ground disturbance would occur along the length of the South Mountain County Road. Sowing seed along the right-of-way would help abate any widespread infestation of Oregon state listed noxious weeds.

8.6.2 Soils

(IDT Reports incorporated by reference: Soils Environmental Assessment for the Proposed Yamaha Projects Report pp.1-15)

Affected Environment

Project 6 would occur in similar soil conditions as those described for Project 1 (EA Section 3.2.2). However, since the proposal involves a road surface, natural soil surfaces would not be part of the affected environment. The road surface consists of existing disturbed soils (i.e., portions of surface soil and organic matter removed and remaining soil compacted and augmented with rock from off-site sources).

Environmental Effects

8.6.2.1 Alternative 1 (No Action)

The No Action Alternative would result in a continuation of the soil condition and trends as described under the affected environment.

8.6.2.2 Alternative 2 (Proposed Action)

Road improvements would result in no change in the amount of current non-forest land and there would be no effect on soil productivity or existing soil physical and chemical processes. Some encroaching vegetation along these roads would be cut and surface rock would be added where needed. Drainage structure improvements or replacement would occur at several locations. These actions would improve drainage and road surface conditions, resulting in less road surface erosion into the surrounding area and streams and would reduce the risk of landsliding or mass wasting associated with roads in steep landscapes.

The improvement 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 and reshaping operations. Litter-fall accumulations and the growth of vegetation generally re-establish within one or two years and erosion rates would be expected to return to very low levels thereafter.

8.6.3 Water

(IDT Report incorporated by reference: Hydrology/Channels/Water Quality Addendum for Yamaha Project pp.1-16)

Affected Environment

Project 6 would occur in similar hydrologic conditions as those described for Project 1 (EA Section 3.2.3).

Environmental Effects

8.6.3.1 Alternative 1 (No Action)

Under this alternative the existing water quality conditions, stream flows, and channel conditions at the project site would continue their current trends.

8.6.3.2 Alternative 2 (Proposed Action)

The proposed action would be confined to the existing road right-of-way. Based on observation of existing culverts and stream crossings, effects from the project would be limited to the site of disturbance and unlikely to result in any alterations to channels or floodplains downstream or elsewhere in the watershed. However, it would likely benefit water quality by reducing chronic surface erosion and fine sediment delivery from road surfaces to stream channels.

8.6.4 Fisheries/Aquatic Habitat

(IDT Reports incorporated by reference: Yamaha Fisheries Report pp. 1-20)

Affected Environment

Project 6 would occur in similar conditions as those described for Project 1 (EA Section 3.2.4).

Environmental Effects

8.6.4.1 Alternative 1 (No Action)

No major improvements would occur on the South Mountain County Road. The existing road bed would remain largely unchanged. Road surfacing and ditchline erosion would continue and drain toward Road 14-6-17 in Section 24. Sediment would continue to build up at the intersection and potentially be recruited into the nearby intermittent stream channel during moderate to high flow events or transported closer to the Peak Creek stream crossings during heavy traffic use. Negative affects of fine sediment in the nearby intermittent channels would likely continue; however, impacts to fish habitat would be largely undetectable.

8.6.4.2 Alternative 2 (Proposed Action)

The proposed road improvement work is intended to improve drainage and road surface conditions on 3.5 miles of road, resulting in less erosion into the surrounding area over time. The proposed road improvement (rocking, grading and ditchline reconstruction) would be expected to result in a minor short-term increase in erosion in the winter following work (Hawe 2007), until reestablishment of vegetation in the subsequent growing seasons. Any sediment that would reach intermittent streams from the streams crossings affected by road improvement would be assimilated into the intermittent channels before reaching fish habitat (Duncan et al, 1987). Any sediment reaching fish habitat during and immediately following project activities is expected to be undetectable against background turbidity.

The proposed action would treat a road segment identified as a chronic sediment problem during project scoping. Implementation of the road improvement over the long-term would result in a net reduction in sediment transported off road that could affect aquatic habitat. However, at the seventh field watershed scale this beneficial affect is expected to be undetectable on water quality (Hawe 2007), thus affects to aquatic habitat would also likely be undetectable.

8.6.5 Wildlife

(IDT Reports incorporated by reference: Biological Evaluation pp. 1-11)

Affected Environment

Affected environment is the same as for Project 1 (EA Section 3.2.5)

Environmental Effects

8.6.5.1 Alternative 1 (No Action)

The No Action Alternative would result in no change to the affected environment. Short-term impacts to wildlife species and habitats as described for the proposed action would be avoided.

8.6.5.2 Alternative 2 (Proposed Action)

Project 6 would have no effect on designated marbled murrelet and spotted owl critical habitat.

8.6.6 Fuels/Air Quality

(IDT Reports incorporated by reference: Yamaha LSR Enhancement Project Proposal Fuels Report pp. 1-10)

Affected Environment

The affected environment for the proposed action is the same as that described for Project 5 (EA Section 7.6.6).

Environmental Effects

8.6.6.1 Alternative 1 (No Action)

Current fuel conditions would be maintained.

8.6.6.2 Alternative 2 (Proposed Action)

Environmental effects of the proposed project on fuels/air quality would be essentially the same as for Project 5 (EA Section 7.6.6.).

8.6.7 Recreation/Visual Resources

(IDT Reports incorporated by reference: Recreation/Rural Interface/VRM Report pp. 1-9)

Affected Environment

The affected environment for the proposed action is described under Project 1, Section 3.2.7.

Environmental Effects

8.6.7.1 Alternative 1 (No Action)

Environmental effects for the No Action Alternative are the same as described in Project 5 (Section 3.2.7).

8.6.7.2 Alternative 2 (Proposed Action)

Recreation

This project would have little impact on recreational use but may cause traffic delays along the South Mountain County Road.

Visual Resources

Environmental effects are similar to those described under Project 5.

9.0 CUMULATIVE EFFECTS FOR ALL PROJECTS

9.1 Vegetation

(IDT Reports incorporated by reference: Botanical Report Yamaha pp. 1-12 and Yamaha Silvicultural Prescription and Riparian Report pp. 1-25)

There would be no cumulative effects to the vegetation from all projects, as the effects from the projects would be local, and there would be no other uses affecting this resource. However, wildlife habitat enhancement on federal land (Projects 1-3) may provide greater habitat connectivity function over adjacent areas.

9.2 Soils

(IDT Reports incorporated by reference: Soils Environmental Assessment for the Proposed Yamaha Projects Report pp.1-15)

The combined effect of the proposed actions (Projects 1-6), together with existing trends and conditions in the project area, would increase soil compaction and top soil displacement at specific sites in the project areas. These impacts would be localized and surrounded by less impacted ground; overall vegetation growth would not be stifled in the area. However, soils which are currently recovering from past disturbances would be re-disturbed, extending the recovery period. The potential for increased OHV traffic from Project 1, together with use in the adjacent areas, could expand the system of compacted recreational trails in the area.

Any existing cumulative effects in the watershed would continue to occur from the development and use of private and other agency lands (primarily timber harvesting and road building).

9.3 Water

(IDT Report incorporated by reference: Hydrology/Channels/Water Quality Addendum for Yamaha Project pp.1-16)

The current condition of the watersheds in the project areas (Projects 1-6) indicates low risk for an existing augmentation of peak flows from forest openings due to harvest or disturbance. The proposals would not result in any increase in forest openings in ROS areas with crown closure less than 35 percent and therefore would be unlikely to result in a detectable augmentation of peak flows. Proposed road use and construction is unlikely to alter surface or subsurface hydrology in a manner that would result in a detectable change in stream flow from current conditions in the watershed. Since the proposals are not likely to result in a detectable direct or indirect effect to peak flow, the proposals would be unlikely to contribute cumulatively to any existing augmentation of peak flow in these watersheds.

Since there is unlikely to be any measurable direct or indirect effect in the quantity or flow of the ground water, the proposed actions carry a low risk for contributing to any existing cumulative effects either in the uplands or in lower valley positions.

With the exception of road maintenance sites at stream crossings (Project 1), the proposals would be unlikely to result in any measurable direct or indirect effects, such as increases in bank erosion, channel incision, loss of floodplain connectivity or alteration of local wetland hydrology, to stream channel or wetland morphology or function. Effects from maintenance of stream crossings would

be limited to the site of disturbance and unlikely to result in any alterations to channels or floodplains downstream or elsewhere in the watershed. Since the proposals are not likely to result in measurable direct or indirect effects to channel or wetland function, and all effects are within the range of those disclosed in the RMP, the proposals would be unlikely to contribute to any potential cumulative effects in these watersheds.

Overall, the proposals (Projects 1-6) are unlikely to have any measurable direct or indirect effect on stream temperatures, pH, or dissolved oxygen. Current conditions and trends in water quality would likely be maintained under the proposed actions. Therefore, the proposals have little potential for contributing to any cumulative effects to these water quality attributes in these watersheds.

According to watershed analysis, past harvest activities and road building have increased sediment yields in these watersheds relative to an undisturbed condition. In the short-term, these actions would contribute to this increase cumulatively. However, the magnitude and duration (risk is highest in the first year following treatment) of the effect would be non-detectable relative to the overall sediment supply in these watersheds given current technology. Typically, sediment yields from forest harvest decrease over time (Dissmeyer, 2000). The quantity of surface erosion with delivery of sediment during large storm events would likely drop back to current levels within three to five years as the remaining forest stands fill out.

In a similar manner, the risk of short-term (during the action and the first winter following) increases in stream turbidity as the result of road repair and hauling may contribute to increased turbidity levels directly below road/stream intersections. These would be maintained below the limits required by the ODEQ. The limited magnitude (not visible more than 800 meters downstream of the crossing) and duration (primarily in the first winter following road repairs) of this effect would be non-detectable on the scale of the seventh field watershed and would be unlikely to have any effect on any designated beneficial uses.

Over the long-term, the incremental improvement of forest stand characteristics (increased species diversity and wood recruitment) in the Riparian Reserves would support the cumulative improvement in these conditions that is anticipated throughout these watersheds in response to the NWFP. This would add cumulatively to the improvement in the condition of stream channels and wetlands in the watersheds.

As the effects of LWD placement in a system can extend upstream and downstream of the project site, Project 4 has the potential to overlap with the effects of Project 1, future and current actions being taken in the watershed, as well as naturally occurring processes. As each action has the potential to increase the input of fine sediment into the stream system, there is the risk of a cumulative effect of stream aggradation, deposition, or changes to bed load. These processes are occurring in the South Fork Alsea River, where fine sediment levels may be high.

As LWD slows stream velocities, suspended sediment begins to settle out of the water and deposit on the stream bed and along the banks. Therefore, the addition of LWD into the system could potentially trap some of the sediment being generated in the watershed and delay its journey downstream to the Alsea River. These projects could also potentially impact stream flows, by removing additional trees within the watershed. However, because of the small number of trees which would be felled and the persistence of a stream side canopy, the effect of the projects on stream flows would be non-detectable.

9.4 Fisheries/Aquatic Habitat

(IDT Reports incorporated by reference: Yamaha Fisheries Report pp. 1-20)

The cumulative effects of the proposed actions associated with the Yamaha Projects to the vegetation, hydrology, and soil resources were assessed under the Hydrology and Soils Report (Hawe 2007) and the Silvicultural Prescription and Riparian Report (Caldwell 2007). Combined with the direct and indirect affects analysis presented in the fisheries report these additional cumulative effects analyses form the basis of the fisheries resource cumulative effects analysis.

The proposed density management treatments, (Projects 1 and 2) are not expected to alter LWD recruitment, stream bank stability, and sediment supply to channels at the 5th field watershed scale in the short-term or long-term with the implementation of stream-side SPZs. The proposed snag/CWD creation and large tree release project (Project 3) would be unlikely to affect fish habitat directly and except for its contribution to the LWD placement project (Project 4) would be unlikely to have cumulative impacts to aquatic habitat.

Based on the project design criteria, proposed road construction associated with the Project 1 would not occur in Riparian Reserves. Thus, road construction is not anticipated to affect LWD recruitment or sediment transport to streams at the site level and no cumulative effects are anticipated to instream structure or sediment regimes in Upper Alsea Watershed. Proposed road renovation activities associated with Project 1 may result in localized sediment transmission to intermittent streams. These effects were not anticipated to reach fish habitat downstream and would not be expected to contribute to any cumulative effects.

Proposed timber hauling on rocked roads would not occur over or adjacent to fish bearing stream channels. Hauling may contribute a minor amount of sediment to the intermittent streams. The small magnitude of sediment is not anticipated to reach fish bearing streams more than 300 feet downstream from the nearest rocked road crossing. The small scale local effects which may occur due to proposed hauling is not anticipated to contribute to cumulative effects at the fifth field level. These impacts aren't anticipated to result in increased sediment transport rates downstream which could combine with other sediment source areas and create additive impacts.

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 were considered unlikely to affect peak flows and are unlikely to contribute to cumulative effects (Hawe 2007). Subsequently no cumulative effects are anticipated on aquatic resources.

The hydrology report indicated that the proposed project was considered unlikely to have detectable effects on stream temperatures and not expected to result in any cumulative affects to temperature (Hawe 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 temperature, streambank conditions, and peak flows these issues would not result in cumulative effects for fisheries resources.

Proposed LWD Placement and Trout Creek Culvert Replacement would result in stream bank alterations and changes in sediment transport rates at treatments sites. These effects would be limited to short channel segments upstream and downstream of the treatment sites; and cumulatively would not be expected to substantively alter bank stability in the short-term.

The LWD Placement project would be complementary with the prior Falls Over Stream Enhancement Project. Some sections of the South Fork Alsea River from Road 14-6-9 to the falls have potential erosion concerns which could increase. Placing trees in any river can have unpredictable consequences because there are so many variables. While treatments would generally not occur in the same locations as Falls Over, linear improvement to aquatic habitat provided by Project 4 would improve stream function and stability which would be expected to enhance the stability and habitat qualities of the Falls Over Project. Project 4 would increase the abundance of LWD in the treated reaches. Assuming all LWD project reaches are treated, (covering over 6 miles of stream in the Upper Alsea), to the extent that these reaches meet LWD benchmarks this would provide LWD to more than 3.5 percent of the fish bearing streams in the Upper Alsea Watershed.

Over the long-term, improved flow hydraulics at the culvert replacement site (Project 5) should reduce downstream scour and increase bank stability.

Watershed analysis indicated Peak Creek may be experiencing elevated turbidities compared to other tributaries of the South Fork Alsea River with no apparent point sources (BLM 1995). The South Mountain County Road draining towards Peak Creek was noted as a chronic erosion problem in the SFAWA. Recent field reviews indicate this road segment continues to be a sediment concern. Limiting sediment generation from that road, or limiting its connectivity to Peak Creek, would contribute to improving sediment levels in Peak Creek. Implementation of the South Mountain County Road improvement may result in localized short-term negative impacts and long-term beneficial effects; however, the limited magnitude of the action was not anticipated to result in any detectable affects thus no cumulative effects are anticipated.

9.5 Wildlife

IDT Reports incorporated by reference: Biological Evaluation pp. 1-11)

There would be a positive cumulative impact in the Upper Alsea River Watershed to wildlife from these actions since the Yamaha Projects are designed to enhance the conditions of these resources. Projects 1-3 are surrounded by private lands which only provide early and mid-seral forest habitat under current management plans. Since these private forest lands would never provide interior late-seral or old-growth forest habitat. Any treatments which enhance the characteristics of older forests would have a positive effect on species, systems, and functions which depend upon these forest types.

9.6 Fuels/Air Quality

(IDT Reports incorporated by reference: Yamaha LSR Enhancement Project Proposal Fuels Report pp. 1-10)

Fuels

Project 1 Although there would be an increase in fuel loading and resultant fire hazard in the short-term, there would be positive net benefits in the long-term due to the proposed density management treatments. When looked at from a watershed scale, the density management of approximately 159 acres of forest habitat would reduce the long-term (5 or more years) potential of the stand to carry a crown fire. Any increase in fuel loading and resultant fire hazard would be insignificant.

Project 2 Although in the short-term there would be an increase in fuel loading and resultant fire hazard, there would be mitigating actions taken to reduce the cumulative impacts of the newly

created slash. Over the span of 10-15 years the slash would diminish as it breaks down into duff and soil.

Project 3 There would be few cumulative effects, as the effects from the project would be local, and there would be no other uses affecting this resource. Although there would be a slight increase in fuel loading and resultant fire hazard in the short-term, the increase would be very small and would diminish within 3-5 years or less.

Air Quality

There would be few cumulative effects, as the effects from the projects would be local, and there would be no other uses affecting this resource. Burning of slash 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 area, there are no expected cumulative effects on air quality from the planned fuels treatments under these proposals.

9.7 Recreation/Visual Resources

(IDT Reports incorporated by reference: Recreation/Rural Interface/VRM Report pp. 1-9)

Recreation

Current recreation use of Project 1 area would be restricted in the short-term and return to previous use upon completion of all operations. There are alternative areas in the vicinity to do recreational activities while this project is occurring. Projects 3, 5 and 6 would have little to no impact on recreational uses.

In 2002, the Falls-Over Project was completed which entailed falling and leaving trees along some of the same stretches of the South Fork Alsea River as in proposed Project 4. This project in conjunction with unseasonably high rainfall raised the water levels in the Alsea Falls Recreation Area resulting in portions of trails, and picnic and campsites to flood.

Visual Resources

Projects 1, 2, and 3 would contribute to the amount of timber cut in the watershed, but the amount taken is minimal compared to what is happening on private lands. Timber harvest activities near or adjacent to the projects are observable from private and public lands and roads including the South Fork Alsea Access Road. Portions of all six projects are in VRM 4 class and would comply with management objectives. Portions of Projects 1, 3 and 4 are located in VRM 2 class and by following design features would comply with management objectives for these areas.

Projects 5 and 6 would have minimal to no impacts on visual resources.

The South Fork Hazard Tree Removal proposed project (FY 2008) is scheduled to occur within the same timeframe as the Yamaha projects. It would remove trees within 100 feet of the South Fork Alsea Access Road. That proposed project would impact recreation and visual resources much like Project 1.

10.0 Compliance with the Aquatic Conservation Strategy

Existing Watershed Condition

The Yamaha LSR Enhancement/Aquatic Habitat Restoration Project areas are in the Upper Alsea River 5th-field watershed which drains into the Alsea River. Fifty-two percent of the Upper Alsea River watershed is managed by BLM, 47 percent is private and 1 percent is managed by the Forest Service. Approximately 37 percent of the total BLM managed lands consist of stands greater than 80 years old; and approximately 27 percent of BLM-managed lands are located in riparian areas (within 100 feet of a stream)

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 would occur within RMP Riparian Reserves;

Component 2 – Key Watershed: by establishing that the Yamaha projects are not within a key watershed;

Component 3 –Watershed Analysis: The South Fork Alsea River Watershed Analysis (1995) 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:

- **Projects 1 & 2:** Density management opportunities in LSRs should focus at improving the corridor of dispersal habitat in the Middle South Fork Alsea River, Upper South Fork Alsea River, and Peak Creek subwatersheds, since existing Late Successional/Old Growth habitat in this area is highly fragmented. The Yamaha LSR Enhancement Project is located within the Middle South Fork Alsea River and Upper South Fork Alsea River subwatersheds (p. 44).

- **Project 3:** The desired future conditions for wildlife habitat are contingent upon the amount and condition of coarse woody debris (snags and down logs) and will be at least sufficient to support cavity nesting birds at 60percent of potential population levels (p. 44).

- **Project 4:** The Alsea River system is one of the most productive anadromous fisheries in Oregon. Analysis indicates that two key habitat features, large woody debris in the streams and high quality pools, are lacking throughout much of the watershed. The analysis recommends conducting in-stream structural improvement projects, which have proven to be successful in this watershed. In-stream structural projects are short-term, stop gap measures intended to help the

fisheries to survive and function until the riparian zones recover. Stream portions with low potential (Middle South Fork Alsea subwatershed) have the greatest need for riparian and stream restoration. Project 4 is located in the Middle South Fork Alsea and Upper South Fork Alsea subwatersheds (p. 2).

- **Project 5**: Corrective measures could include: upgrading existing drainage structures not adequate to accommodate a 100-year flood event, (p. 94).

- **Project 6:** Approximately 18 miles of unsurfaced roads were identified that either need surfacing or permanent closure. The South Mountain county controlled road (3.3 miles) is the major sediment source contributing to poor water quality in the watershed (p. 94).

Component 4 – Watershed Restoration:

Projects 1 & 2 would restore watershed conditions by providing a gradual transition in structural characteristics of the treated stands that would more closely resemble late-seral forest. These projects would also promote stand diversity, provide more light to accelerate growth of selected conifers and promote species diversity.

Projects 3 & 4 would enhance terrestrial CWD by creation of snags and down logs within forest stands where this structural component is lacking, release the largest trees with the greatest crowns that are threatened by canopy encroachment, and provide for and place in-stream log structures in fish bearing streams where large woody structures are lacking.

Projects 5 & 6 would improve habitat conditions for coho salmon, steelhead and cutthroat trout. They would also assist in restoring and improving ecological health of watersheds and aquatic systems by replacing failing culverts and reducing road related adverse effects for the long-term restoration of the aquatic system.

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 14: Project' Consistency with the Nine Aquatic Conservation Strategy Objectives

Aquatic Conservation Strategy Objectives (ACSOs)	Projects 1 and 2– Density Management	Project 3 – Snag/CWD Creation & Large Tree Release	Project 4 – Large Woody Debris Placement	Project 5 – Culvert Replacement	Project 6 – Road Improvement
1. Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features.	Does not prevent the attainment of ***ACSO 1***. The Upper Alsea River Watershed where these projects occur lack structural diversity and CWD. The projects would enhance late-successional forest conditions and speed up attainment of these conditions across the landscape.	Does not prevent the attainment of ***ACSO 1***. The Upper Alsea River Watershed lacks late seral/old growth habitat and coarse woody debris. Project 3 would enhance late-successional forest conditions such as snags, CWD, and complex live crown structure.	Does not prevent the attainment of ***ACSO 1***. The addition of LWD into Peak Creek and South Fork Alsea River would help to restore the diversity and complexity of watershed features to which native aquatic and riparian species are uniquely adapted. Current levels of LWD are severely depleted compared to historic ("natural") conditions.	Does not prevent the attainment of ***ACSO 1***. Replacing two failing culverts with structures designed for 100 year flood events and fish passage would maintain watershed and landscape features to ensure protection of aquatic systems. The proposed action when combined with other proposed actions in the Upper Alsea River Watershed is unlikely to have detrimental cumulative effects on the hydrologic regime.	Does not prevent the attainment of ***ACSO 1***. Improvement helps to prevent fill failures, slides, washouts, and other disturbances which can alter landscape features and complexity and add sediment to adjacent streams.
2. Maintain and restore spatial and temporal connectivity within and between watersheds.	Does not prevent the attainment of ***ACSO 2***. No stream crossing culverts would be used that would potentially hinder movement of aquatic species; therefore no aquatic barriers would be created. Both terrestrial and aquatic connectivity would be maintained, and over the long-term, as Riparian Reserves develop late successional characteristics, lateral, longitudinal and drainage connectivity would be restored.	Does not prevent the attainment of ***ACSO 2***. Both terrestrial and aquatic connectivity would be maintained, and over the long-term, as Riparian Reserves develop late successional characteristics, lateral, longitudinal and drainage connectivity would be restored.	Does not prevent the attainment of ***ACSO 2***. The spatial connectivity within the watershed would be restored by providing an unobstructed physical route (habitat) to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species. The project would restore temporal connectivity in the watershed by restoring a more natural streamflow regime.	Does not prevent the attainment of ***ACSO 2***. Aquatic connectivity would be enhanced by the replacement of two failing culverts with 1 culvert designed to allow fish passage.	Does not prevent the attainment of ***ACSO 2***. Improvement of the transportation system would not affect spatial connectivity.

Aquatic Conservation Strategy Objectives (ACSOs)	Projects 1 and 2– Density Management	Project 3 – Snag/CWD Creation & Large Tree Release	Project 4 – Large Woody Debris Placement	Project 5 – Culvert Replacement	Project 6 – Road Improvement
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***. A minimum 50 foot SPZ would maintain the integrity of shorelines, banks and bottom configurations in these projects. Trees would be directionally felled within one tree height of the SPZ. Any part that falls within the SPZ would be left on site, thereby preventing disturbance to stream banks and bottom configurations.	Does not prevent the attainment of ***ACSO 3***. In Project 3, although trees would be felled toward streams in order to add LWD to those streams, no trees would be cut which are thought to be stabilizing stream banks.	Does not prevent the attainment of ***ACSO 3***. LWD placements along Peak Creek and South Fork Alsea River would enhance variability in stream flow velocities. This in turn would help restore the physical integrity of the aquatic system by causing sediment deposition in some areas and sediment scour in others (including banks, floodplains, and the stream bed).	Does not prevent the attainment of ***ACSO 3***. Culvert replacement necessitates operating machinery in the stream channel, which can compact stream bed substrates, alter bed form and increase sedimentation in the stream system. However, any disturbance is likely to be short-term and design features would be implemented to minimize potential impacts to the hydrologic system. In the long-term, the replaced culvert is expected to perform better than the existing worn culverts and improve hydrologic function. Because the new culvert width would be sized at full bank flows, it is not expected to greatly impede channel function	Does not prevent the attainment of ***ACSO 3***. Roadside ditch and culvert installation and placement of surfacing material and surface blading are all intended to reduce the risk of road embankment failures and sediment input into aquatic systems.

Aquatic Conservation Strategy Objectives (ACSOs)	Projects 1 and 2– Density Management	Project 3 – Snag/CWD Creation & Large Tree Release	Project 4 – Large Woody Debris Placement	Project 5 – Culvert Replacement	Project 6 – Road Improvement
4. Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems.	Does not prevent the attainment of ***ACSO 4***. Stream temperature: According to the stream shading sufficiency analysis done for Projects 1 and 2, the proposed SPZ's of 50 to 55 feet was sufficient to protect critical shade in the primary shade zones, based on topography and average tree height. No gaps would be allowed within 100 feet of streams in Projects 1 and 2. Within the primary shade zones of streams, a canopy of greater than 70 percent would be maintained. Therefore stream shade would be protected in both projects Sedimentation and stream turbidity: see No. 5 below	Does not prevent the attainment of ***ACSO 4***. Incidental cutting of trees would not be allowed within 50 feet of streams in Project 3, and within the primary shade zones of streams a canopy of greater than 70percent would be maintained.	Does not prevent the attainment of ***ACSO 4***. By shading the stream from solar radiation, log structures could reduce stream temperatures, thereby maintaining and restoring water quality conditions necessary to support healthy aquatic ecosystems. Regulating stream temperatures would benefit the survival, growth, reproduction, and migration of the aquatic community.	Does not prevent the attainment of ***ACSO 4***. The project is likely to cause some short-term direct disturbance to water quality, but in the long-term, the replaced culvert is expected to perform better than the existing worn culverts and improve hydrologic function	Does not prevent the attainment of ***ACSO 4***. Improvement is intended to reduce likely deposition of road fill material into adjacent streams.

Aquatic Conservation Strategy Objectives (ACSOs)	Projects 1 and 2– Density Management	Project 3 – Snag/CWD Creation & Large Tree Release	Project 4 – Large Woody Debris Placement	Project 5 – Culvert Replacement	Project 6 – Road Improvement
5. Maintain and restore the sediment regime under which aquatic ecosystems evolved.	Does not prevent the attainment of ***ACSO 5***. Projects 1 and 2 are designed to minimize the risk of a mass soil movement event (slump/landslide). Stream protection zones and project design features would minimize any potential sediment from harvest and road-related activities from reaching water bodies. Road renovation and drainage improvements on existing roads would help to restore the sediment regime to streams in the area.	Does not prevent the attainment of ***ACSO 5***. Although incidental aerial yarding is proposed, any increase in sediment delivery to streams are unlikely to result from these actions.	Does not prevent the attainment of ***ACSO 5***. Log structures would trap gravels and other substrate materials, thereby restoring the stream's sediment regime; includes the timing, volume, rate and character of sediment input, storage, and transport.	Does not prevent the attainment of ***ACSO 5***. Culvert would increase short-term sedimentation in the stream system. However, design features would be implemented to minimize potential effects to the hydrologic system	Does not prevent the attainment of ***ACSO 5***. Road improvement reduces the amount of sediment that enters streams by installing culverts and minimizing road surface and ditch scouring.
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 projects would not measurably alter instream flows. All projects would affect less than 0.2percent of the forest cover in the Upper Alsea River Watershed.	Does not prevent the attainment of ***ACSO 6***. The proposed project would not measurably alter instream flows. Project 3 would affect less than 0.05percent of the forest cover in the Upper Alsea River Watershed.	Does not prevent the attainment of ***ACSO 6***. By altering stream flows, structures would maintain and restore in-stream flows sufficient to create and sustain riparian and aquatic habitats and to retain patterns of sediment, nutrient, and wood routing (the movement of woody debris through the aquatic system).	Does not prevent the attainment of ***ACSO 6***. Proposed project would entail removing as few trees as necessary to complete the project. Therefore, direct effects from this project on cumulative effects to streamflow are too small to be measured with reasonable accuracy	Does not prevent the attainment of ***ACSO 6***. Culvert installations would improve road drainage and infrastructure, reducing erosion run-off and improving water quality.

Aquatic Conservation Strategy Objectives (ACSOs)	Projects 1 and 2– Density Management	Project 3 – Snag/CWD Creation & Large Tree Release	Project 4 – Large Woody Debris Placement	Project 5 – Culvert Replacement	Project 6 – Road Improvement
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***. Design features for both projects, such as SPZs, coupled with the relatively small percent of vegetation proposed to be removed, would maintain groundwater levels and floodplain inundation rates. Detectable direct or indirect effects to stream flow as a result of this action are unlikely.	Does not prevent the attainment of ***ACSO 7***. Design features such as SPZs, coupled with the relatively small percent of vegetation proposed to be cut, would maintain groundwater levels and floodplain inundation rates. Detectable direct or indirect effects to stream flow as a result of this action are unlikely	Does not prevent the attainment of ***ACSO 7***. The presence of LWD structures is likely to increase the frequency, and possibly the duration of floodplain inundation, as well as promote floodplain development.	Does not prevent the attainment of ***ACSO 7***. The proposed action would not alter existing patterns of floodplain inundation or water table elevation as it would have no effects or only negligible short-term negative effects on existing flow patterns and stream channel conditions.	Does not prevent the attainment of ***ACSO 7***. Proper drainage of roads would maintain water tables and flood plain functions. Additional culvert installation sites would help restore flow dispersion on slopes downhill of the roadway, more accurately mimicking the original runoff patterns.
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***. The actual riparian areas along streams would be excluded from treatment in Projects 1 and 2 by designating SPZs, and only the upslope portions of the Riparian Reserves would be included in the density management treatment. There would be little or no change to riparian vegetation on banks or within the riparian zones along streams resulting from the proposed projects.	Does not prevent the attainment of ***ACSO 8***. The actual riparian areas along streams would be excluded from treatment by designating SPZs, and only the upslope portions of the Riparian Reserves would be included in the snag/CWD treatment. There would be little or no change to riparian vegetation on banks or within the riparian zones along streams resulting from the proposed project.	Does not prevent the attainment of ***ACSO 8***. LWD placement is not likely to greatly affect riparian plant species diversity or composition as the amount of riparian vegetation disturbed (during project implementation) would be very small.	Does not prevent the attainment of ***ACSO 8***. Project would require removal of localized vegetation, including occasional trees. Where appropriate, conifers would be replanted in disturbed areas. In the long-term the project would have no effect on species or stand structural diversity	Does not prevent the attainment of ***ACSO 8***. Culvert installations would require removal of small amount of roadside vegetation. Overall diversity of riparian vegetation would not be affected.

Aquatic Conservation Strategy Objectives (ACSOs)	Projects 1 and 2– Density Management	Project 3 – Snag/CWD Creation & Large Tree Release	Project 4 – Large Woody Debris Placement	Project 5 – Culvert Replacement	Project 6 – Road Improvement
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***. Habitat to support well distributed riparian-dependent and riparian associated species would be restored by reducing overstocked stands, moderating tree species diversity, altering forest structural characteristics and amending CWD conditions.	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	Does not prevent the attainment of ***ACSO 9***. LWD structures would provide additional habitat for populations of native invertebrate and vertebrate riparian-dependent species.	Does not prevent the attainment of ***ACSO 9***. There are no negative effects expected to occur to any habitats as a result of culvert replacement. To the extent that the new culvert may facilitate better dispersal of stream and riparian associated wildlife species, the populations of some of these wildlife species should improve	Does not prevent the attainment of ***ACSO 9***. Proper drainage of road would improve water quality which would benefit riparian dependent species.

11.0 LIST OF PREPARERS

Table 15: List of Preparers

Resource	Name	Initial	Date
Cultural Resources	Dave Calver		10/15/07
Hydrology/Water Quality/Soils	Patrick Hawe		10/15/07
Silviculture/Riparian Ecology	Bill Caldwell		10-15-07
Botany TES and Special Status Plant Species	Ron Exeter		oct 15, 2007
Wildlife TES and Special Status Animal Species	Gary Licata		10/15/07
Fuels/Air Quality	Tom Tomczyk		10/15/07
Fisheries/Aquatic Habitat	Scott Snedaker		10/15/07
Recreation/Visual Resources/Rural Interface	Traci Meredith		10/15/07
Natural Resource Specialist	Dan Schreindorfer		10-15-07

12.0 CONTACTS AND CONSULTATION

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

U. S. Fish and Wildlife Service

To address concerns for effects to federally-listed wildlife species and potential modification of critical habitats, 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 facilitated by its inclusion within a programmatic biological assessment 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 2007 and 2008. In the resulting letter of concurrence (FWS Reference Number 1-7-06-I-0190, October 2006) the USFWS concurred with all effect determinations on projects that may affect, but are not likely to adversely affect spotted owls, spotted owl critical habitat, murrelets, murrelet critical habitat, and bald eagles within the BA. This proposed action has been designed to incorporate all appropriate design standards to be analyzed in the biological assessment and would ensure compliance with the terms and conditions to be included within the resulting biological opinion.

NOAA NMFS

Consultation with NOAA NMFS is required for all actions which may affect ESA listed fish species and critical habitat. There are no known fish species listed as threatened or endangered under the Endangered Species Act (ESA), as amended, in the project area at this time.

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 proposed Yamaha projects 1, 2, 3 and 6 are not expected to adversely affect EFH due to distance of all activities associated with the projects from occupied habitat. Consultation with NOAA NMFS on EFH is not required for these projects. Projects 4 and 5 may adversely affect EFH habitat. The proposed actions addressed under these projects would meet the Project Design Criteria established in the *Endangered Species Act Section 7 Formal Programmatic Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for Fish Habitat Restoration Activities in Oregon and Washington, CY2007-CY2012.* Adverse affects to Essential Fish Habitat and application of design features to minimize project affects are covered by this programmatic

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

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.

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

- A scoping letter, dated May 19, 2005, was sent to 55 potentially affected or interested individuals, groups, and agencies. – One response was received during the scoping period.
- A description of the project was included in the June, September and December 2006 and March 2007 project updates to solicit comments on the proposed projects.

12.3.1 EA public comment period

The EA and FONSI will be made available for public review October 14, 2007 to November 13, 2007. The notice for public comment will be published in a legal notice by the *Gazette Times* newspaper. Comments received by the Marys Peak Resource Area of the Salem District Office, 1717 Fabry Road SE, Salem, Oregon 97306, on or before November 13, 2007 will be considered in making the final decisions for this project.

13.0 MAJOR SOURCES AND COMMON ACRONYMS

13.1 Major Sources

13.1.1 Interdisciplinary Team Reports

Exeter, R. 2007. Botanical Report. Marys Peak Resource Area, Salem District, Bureau of Land Management. Salem, OR. Prepared for Yamaha NEPA File.

Caldwell, B. 2007. Silviculture/Riparian Reserves Report. Marys Peak Resource Area, Salem District, Bureau of Land Management. Salem, OR. Prepared for Yamaha NEPA File.

Hawe, P. 2007. Hydrology/Channels/Water Quality: Addendum . Marys Peak Resource Area, Salem District, Bureau of Land Management. Salem, OR. Prepared for Yamaha NEPA File.

Hawe, P. 2007. Soils Environmental Assessment. Marys Peak Resource Area, Salem District, Bureau of Land Management. Salem, OR. Prepared for Yamaha NEPA File.

Hawe, P. 2007. Hydrology/Channels/Water Quality: Specialist Report. Marys Peak Resource Area, Salem District, Bureau of Land Management. Salem, OR. Prepared for Yamaha NEPA File.

Licata, G. 2007 Biological Evaluation for Terrestrial Wildlife. Marys Peak Resource Area, Salem District, Bureau of Land Management. Salem, OR. Prepared for Yamaha NEPA File.

Meredith, T. 2007. Visual, Recreation and Rural Interface Report. Marys Peak Resource Area, Salem District, Bureau of Land Management. Salem, OR. Prepared for Yamaha NEPA File.

Snedaker, S. 2007. Yamaha Fisheries Report. Marys Peak Resource Area, Salem District, Bureau of Land Management. Salem, OR. Prepared for Yamaha NEPA File.

Tomczyk, T. 2007. Project Proposal Fuels Report . Marys Peak Resource Area, Salem District, Bureau of Land Management. Salem, OR. Prepared for Yamaha NEPA File.

13.1.2 Additional References

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.

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. Note: The ROD and S&G are collectively referred to herein as the Northwest Forest Plan (NFP)

USDA Forest Service and USDI Bureau of Land Management. 2006. Biological Assessment, Fiscal year 2007/2008 habitat modification activities in the North Coast Province which might affect bald eagles, northern spotted owls or marbled murrelets.

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.

USDC National Marine Fisheries Service (NMFS) Endangered Species Act Section 7 Formal Programmatic Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for Fish Habitat Restoration Activities in Oregon and Washington, CY2007-CY2012.

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

USDI Bureau of Land Management. 1994. Salem District Watershed Cumulative Effects Analysis Procedure. Salem District BLM, Salem, Oregon. Internal document.

USDI Bureau of Land Management. 1995. Salem District Record of Decision and Resource Management Plan (RMP). Salem District BLM, Salem, OR. 81 pp. + Appendices.

USDI Bureau of Land Management. 1995. South Fork Alsea Watershed Analysis. Marys Peak Resource Area, Salem District, Bureau of Land Management. Salem, OR. 107pp.

USDI Fish and Wildlife Service 2002. Programmatic Biological Assessment in the North Coast
Province for Fiscal Year 2007-2008 Projects Which Would Modify the Habitats of Bald Eagles, Northern Spotted Owls, and Marbled Murrelets.

USDI Fish and Wildlife Service. 2006. Letter of Concurrence for Effects to Northern Bald Eagles (*Haliaeetus leucocephalus*), Northern Spotted Owls (*Strix occidentalis caurina*), and Marbled Murrelets (*Brachyramphus marmoratus*) from the North Coast Province Fiscal Year 2007 – 2008 activities that may affect, but are not likely to adversely affect, due to activities that modify habitat and create disturbance, U.S. Department of the Interior; Bureau of Land Management, Eugene District and Salem District, and the U.S. Department of Agriculture; Siuslaw National Forest(FWS Reference Number 1-7-06-I-0190). USDI Fish and Wildlife Service, Oregon Fish and Wildlife Office, Portland, Oregon. Dated December 01, 2004. [Reference Number 1-7-2005-F-0005].

14.0 Response to Scoping Comments

A scoping letter, dated April 12, 2006, was sent to 29 potentially affected or interested individuals, groups, and agencies. One response was received during the scoping period.

14.1 Summary of comments and BLM responses

The following addresses comments raised in one letter 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. The comments, (in italics type), may have been paraphrased for clarity or conciseness, but the complete text of the comment was available to the Interdisciplinary Team (IDT) making the response. The full text of the comment letter is available in the Yamaha NEPA/ EA file.

14.1.1 Oregon Natural Resource Council (May 11, 2006)

1. Comment: *"We urge you to explore practices of variable density thinning for all stands to be treated, which allows young stands to develop into more complex and resilient forests. This means that thinning should be done in a way that creates ¼ to ½ acre gaps, dense patches, lightly thinned, moderately thinned, and heavily thinned patches in every stand. In addition, we urge you to consider creating more snags and down wood in the LSR stands to be treated (of all ages) than is minimally required*.

Response: We always try to achieve variable density in our LSR treatments, within our operational constraints, and believe that our prescription would accomplish that. We plan to create canopy gaps over the project area which would equal approximately 5percent of the overall stand, and also to leave small unthinned areas (clumps). The clumps and patch cuts would range from approximately .25 to 1 acre, as recommended by Andrew Carey and Jerry Franklin in the following reference (http//www.reo.gov/ama/franklin2001.htm).

We believe the smaller gaps would promote increased growth of shrub species (? 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 "wolfy" 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. We would also reserve all species other than Douglas-fir, to give the stands additional spacing variability.

Vertical diversity would be achieved over the long-term by planting conifers in the patch openings and openings with lower basal areas. Although we are primarily thinning from below, the marking guide calls for leaving healthy intermediate trees in place of dominant ones, recognizing that there would be few of them.

2. Comment: *ONRC generally does not support new road construction in reserves. While we feel that temporary road construction is more appropriate than permanent road construction, temporary roads still channelize water, cause erosion, and conduct invasive weeds.*

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 Riparian Reserves (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	0.07	7	100
P2	New	0.19	29	153

3. Comment: *If possible, BLM should consider whether some material from the Young Stand Management project can be sold to offset still more of the costs for service items in the stewardship contract. These stands should be treated to get a variable density for maximum benefit to late-seral habitat.*

Response: Historically, due to high logging costs (skyline yarding) in relation to relatively low-value timber, this small sized material (less than 8" DBHOB) has not been sold (except as posts, poles, firewood) as a commercial product within the Marys Peak RA. However, if a prospective buyer indicates a desire to purchase the material, the BLM would not deny the sale of this material. Variable density management would be accomplished through the use of either a diameter limit marking guideline. Openings of up to 1,600 square feet could result.

4. Comment: *To maintain the natural diversity and variability that already exists in older forests within the Yamaha Density Management Project area, we can see the need for some thinning in these stands, and that management activities should include creation of snags and down wood. We would be supportive of removal of some of the trees older than 80 years if doing so would increase the diversity and health of the forest stand, and if the trees are used as down wood in deficient stands in other areas of the Yamaha project or as large wood for in stream restoration projects.*

Because of the older nature of these stands, impacts on old-growth species should be discussed in detail in the EA. This should include an analysis of effects on special status species listed in applicable management plans. Special attention to snag habitat is also needed.

Response: Thinning would only occur in early-seral (0-39 years) and mid-seral (40-79 years) forest stands and not in older forests of the Yamaha project area. No trees older than 80 years would be removed from the overall project area. Less than one tree per acre would be cut or topped in stands older than 80 years. Snags and CWD would be created in areas within these older stands that are lacking large hard dead wood structure. This treatment would have no impact on the composition and function of these older stands and is expected to improve the structure of the stands by adding a small amount of dead wood. The Biological Evaluation for terrestrial wildlife for the Yamaha Project discusses the impacts to all listed species in Appendix A of that report.

5. Comment: *"feel it is absolutely essential to maintain all large diameter snags, regardless of height or decay class. In your analysis, disclose the current condition of those snags and CWD that are legacies of the natural stands clearcut 50-60 years ago…BLM should use the DecAID decision support tool and conserve all the many values of snags and down wood…"*

Response: We agree 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 believe the design features for the protection of existing down logs and snags as stated in the EA (pg. 15) provides the necessary protection for these resources and removes any incentive for needlessly felling or removing them.

We have also purposely designed most of our un-thinned clumps (skips) to protect one or more snags.

The BLM is not relying on old out-dated science concerning management of snags and down logs. As required by the Northwest Forest Plan, a Late-Successional Reserve Assessment was completed in June 1997 that covers BLM lands in the project area, and addresses management considerations for retention and creation of CWD based on relevant research findings from a number of studies within the Coast Range Province. This document, along with the DecAID tool and other references provided a foundation for development of the prescription for snags and down logs, and are cited in the Biological Evaluation of wildlife resources.

The Marys Peak RA would be enhancing recently harvested density management projects by creating snags and CWD (girdling/falling/leaving average stand diameter reserve trees), falling and leaving on site trees that are encroaching on and ultimately impeding the survival of the live crowns of old growth trees and by falling trees into live streams for LWD enhancement purposes. Approximately $40,000/year will be spent on these types of habitat enhancement projects from Fiscal Years 2007 through 2010.
The Marys Peak RA collected pre harvest (2000) and post harvest (2003) snag and CWD data within a LSR enhancement project (Crooked Alder) to determine the effectiveness of CWD enhancement in conjunction with the timber sale contract requirements. The data indicates that overall, the volume of CWD increased from 244 cu/ft/ac to 3,164 cu/ft/ac and the number of pieces of CWD increased from 7.5 pieces/ac to 120 pieces/ac. Since 2001, when implementing LSR enhancement projects, the Marys Peak RA has included the reservation of all existing CWD and the creation of new CWD within the timber sale contract. We understand that CWD is an important component of late successional forest conditions and will continue to enhance this condition through LSR projects.

6. Comment: *The damage to the trails in the Alsea Falls recreation area must certainly be repaired. We are not convinced, however, that the project qualifies under the stewardship authority. Is the damage to the trail contributing significant sediment to the river or otherwise harming water quality? Is there funding that can come from another, more appropriate and timely, source?*

Response: You are absolutely correct. This proposal will not be included under the Yamaha EA. The trail damage is not severe enough to affect water quality. We are currently looking at different funding alternatives.

7. Comment: *The number and priority of culvert replacement should be based on a cost-benefit analysis. How much upstream habitat will be opened up by replacing the culvert? Is the stream currently providing habitat or is it potential habitat? Do the short-term risks outweigh long-term gain? Will replacement improve a water-quality-limited stream?*

Response: Other than the structures on Coleman and Trout Creeks the remaining culverts proposed for replacement are on lesser sources tributary to fish bearing streams. There are two primary reasons we propose to replace those lesser sized pipes with this project, including: the culverts have reached the end of their designed life and suffer from excessive wear, or the culverts barrel is of insufficient diameter to handle the amount of stream flow. The consequences of a pipe failure can range anywhere from increased sedimentation downstream of the drainage structure, to a total road failure. In either case, the road may need to be closed until repairs can be made. If the failure were to occur in the winter months which, is generally the case, significantly more sediment would enter the stream during repair than if the pipe were replaced in a controlled setting during the drier summer months.

8. Comment: *From what we have seen so far, here is how we would prioritize the proposed projects in Yamaha: 1. Density management/young stand management, 2. South Fork Alsea small culvert replacement and Hull Park culvert replacement, 3. Adding wood to Peak Creek and S. Fork Alsea, 4. Fuel reduction and hazard tree removal at Alsea Falls, 5. South Mountain County Road reconstruction, 6. Repair of Alsea Falls Trail, 7. Coleman Creek Culvert Replacement.*

Response: The *Secure Rural Schools and Community Self Determination Act of 2000* (PL 106-393) expired as of September 30th, 2006 and as of this date has not been renewed. When the U.S. Forest Service and Bureau of Land Management first embarked on the joint collaborative effort to award stewardship contracts in the Alsea Basin, it appeared as though Secure Rural Schools would continue to be authorized. However, the Benton County Commissioners did state that should *Secure Rural Schools* not be re-authorized, that they would not support the use of excess receipts to perform service type

work, since those receipts would then be needed to be deposited into the United States Treasury and then re-distributed to the 18 western Oregon counties that rely on those receipts for a portion of their budgets.[1]

Should *Secure Rural Schools* be re-authorized at a later date these projects would be prioritized based on a group developed criteria on which to base priorities. We appreciate your input and will prioritize the projects at some point if the *Secure Rural Schools and Community Self Determination Act* is re-authorized.

9. Comment: *Special status species surveys must be completed prior to developing NEPA alternatives and before the decision is determined. On-the-ground field reconnaissance surveys must be done and used to develop NEPA alternatives.*

Response: All special status and survey and manage surveys will be completed to protocol and be in compliance with the 2001 and 2004 RODs. Prior to developing project design features an extensive amount of on the ground reconnaissance surveys were completed. Units 23D, 23E (western portion) 14B and Project areas 3 and 4 have not been surveyed and would be surveyed prior to the Record of Decision.

10. Comment: *Project analysis should separately discuss each of the Aquatic Conservation Strategy objectives. Any commercial harvest activities or road construction in key watersheds or municipal watersheds should be avoided in order to protect water quality.*

Response: Each ACS objective was addressed separately in the EA (see Appendix 1). The project area is located within the Upper Alsea River Watershed which is not within a key or municipal watershed.

11. Comment: *A full range of action alternatives should be considered for this project. These alternatives should include not building new roads, and not harvesting in late-seral forests.*

Response: The proposed action alternative for Projects 1 and 2 would develop early and mid seral stands toward late-successional forest conditions by accelerating the growth of conifer trees and by restoring habitat (e.g. CWD, snag habitat, in-stream large wood) through variable density thinnings. Approximately 1700 feet of temporary new road construction would be necessary to facilitate harvest activities (See response #2).

[1] The lion's share of BLM-administered lands in Western Oregon are managed under the authority of the *O&C Lands Act of August 28th, 1937.* The *O&C Lands Act* requires that 50 percent of the revenue generated from management of the lands be returned to the 18 counties that contained lands that were previously owned by the Oregon and California Railroad, but then re-vested to the U.S. Government due to land fraud.

Wildlife habitat would be enhanced by creating immediate CWD. A gradual transition in structural characteristics of the treated stands that 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) would be accomplished. In addition, the extended persistence of hardwood tree and shrub cover diversity would be maintained. Except for a portion of the trees in Project 3 that would be used as LWD for Project 4, no harvesting would occur in late-seral forests.

12. Comment: *Hazard tree removal in the campground/picnic area of Alsea Falls seems reasonable and necessary. Is there a fire hazard in the area from fuels? How will fuels be treated? What are the impacts to the forest, water quality, and recreation experience?*

Response: This project will not be proposed under the Yamaha EA. Many of the dead and dying trees have been cut for firewood for use in the campground. The area between the campground and picnic area has more down trees that could have the potential to spread fire. Hikers or those driving the South Fork Alsea Access Road could start a fire but this is not a greater fire danger than any other area with the same amount of down trees.

15.0 Appendix A– Yamaha LSR Enhancement Marking Guide

Unit	Species to Cut	Gaps	Basal Area	Trees/Acre	Spacing
14A	DF	Trees within 60 feet of trees larger than 39 inches DBHOB would be cut (gap). These gaps would average up to one per acre. An average of one tree greater than 23inches DBHOB would be topped (cut or girdled) and one tree greater than 23 inches DBHOB would be cut and left on site within the gaps. The remaining cut trees would be harvested.	Leave a range of 150 to 190 square feet of basal area. Total stand basal area (including conifers greater than 10 inches) should average about 170 over the whole unit.	42 - 60 Total T/A (including all reserved trees) should average about 51 over the unit	Spacing should be variable
14B	DF	Trees within 60 feet of trees larger than 19 inches DBHOB would be cut (gap). These gaps would average up to one per two acres. Two trees would be reserved within the gap for future snag and CWD. The remaining cut trees would be harvested.	Leave a range of 90 to 130 square feet of basal area. Total stand basal area (including conifers greater than 10 inches) should average about 110 over the whole unit.	54 - 93 Total T/A (including all reserved trees) should average about 73 over the whole unit	Spacing should be variable
23A	DF	Trees within 60 feet of trees larger than 44 inches DBHOB would be cut (gap). These gaps would average up to one per acre. An average of one tree greater than 23 inches DBHOB would be topped (cut or girdled) and one tree greater than 23 inches DBHOB would be cut and left on site within the gaps. The remaining cut trees would be harvested.	Leave a range of 140 to 180 square feet of basal area. Total stand basal area (including conifers greater than 10 inches) should average about 160 over the whole unit.	38 - 55 Total T/A (including all reserved trees) should average about 45 over the whole unit	Spacing should be variable

Unit	Species to Cut	Gaps	Basal Area	Trees/Acre	Spacing
23B	DF	Trees within 60 feet of trees larger than 33 inches DBHOB would be cut (gap). These gaps would average up to one per acre. An average of one tree greater than 23 inches DBHOB would be topped (cut or girdled) and one tree greater than 23 inches DBHOB would be cut and left on site within the gaps. The remaining cut trees would be harvested.	Leave a range of 140 to 180 square feet of basal area. Total stand basal area (including conifers greater than 10 inches) should average about 160 over the whole unit.	50 - 78 Total T/A (including all reserved trees) should average about 63 over the whole unit	Spacing should be variable
23C	DF	Trees within 60 feet of trees larger than 37 inches DBHOB would be cut (gap). These gaps would average up to one per acre. An average of one tree greater than 23 inches DBHOB would be topped (cut or girdled) and one tree greater than 23 inches DBHOB would be cut and left on site within the gaps. The remaining cut trees would be harvested.	Leave a range of 130 to 170 square feet of basal area. Total stand basal area (including conifers greater than 10 inches) should average about 150 over the whole unit.	45 - 67 Total T/A (including all reserved trees) should average about 56 over the whole unit	Spacing should be variable
23D	DF	Trees within 60 feet of trees larger than 22 inches DBHOB would be cut (gap). These gaps would average up to one per two acres. Two trees would be reserved within the gaps for future snag and CWD. The remaining cut trees would be harvested.	Leave a range of 90 to 130 square feet of basal area. Total stand basal area (including conifers greater than 10 inches) should average about 110 over the whole unit.	51 - 94 Total T/A (including all reserved trees) should average about 75 over the whole unit	Spacing should be variable

Unit	Species to Cut	Gaps	Basal Area	Trees/Acre	Spacing
23E	DF	Trees within 60 feet of trees larger than 29 inches DBHOB would be cut (gap). These gaps would average up to one per acre. An average of one tree greater than 23 inches DBHOB would be topped (cut or girdled) and one tree greater than 23" DBHOB would be cut and left on site within the gaps. The remaining cut trees would be harvested.	Leave a range of 120 to 160 square feet of basal area. Total stand basal area (including conifers greater than 10 inches) should average about 140 over the whole unit.	38 - 45 Total T/A (including all reserved trees) should average about 41 over the whole unit	Spacing should be variable
23G	DF	Trees within 60 feet of trees larger than 44 inches DBHOB would be cut (gap). These gaps would average up to one per acre. An average of one tree greater than 23 inches DBHOB would be topped (cut or girdled) and one tree greater than 23 inches DBHOB would be cut and left on site within the gaps. The remaining cut trees would be harvested.	Leave a range of 130 to 170 square feet of basal area. Total stand basal area (including conifers greater than 10 inches) should average about 150 over the whole unit.	34 - 51 Total T/A (including all reserved trees) should average about 42 over the whole unit	Spacing should be variable
23H	DF	Reserve all WH and DF greater than 9.9 inches DBHOB. No openings greater than 0.25 acres.	Basal area will be approximately 50 square feet per acre.	42 - 80 Total T/A (including all reserved trees) should average about 67 over the whole unit	Spacing should be variable

Spacing:

- Variability would be achieved by treating small units and varying the Basal Area (BA) throughout the unit according to the BA range for each unit as listed in the above marking guide table.
- Take advantage of diversity already occurring in the stand by leaving clumps of trees around snags. Assume some of the green trees in those clumps will end up

as snags/down wood.

- Open up the crowns of "wolfy trees" (big thick branches, deep crowns) completely, removing all the trees around them.
- Cut extra trees around understory conifers, or reserved western hemlock, giving them enough light for survival/growth. Conversely, if it looks like a patch of small conifers will be destroyed by yarding, leave some large trees around them to act as a buffer.

Gaps:

- In general a 0.25 acre patch would be created around each large reserve tree by cutting and harvesting all trees within 60 feet of the selected center tree. Any tree(s) other than the center tree within the 0.25 acre patch greater than 36 inches DBHOB would be left uncut and reserved for large structure habitat. If there are no trees in the greater than 23 inch and less than 37 inch DBHOB class for snag and CWD creation then use the largest diameter tree available. If there are two or more large trees within the patch then create one larger patch not to exceed 0.50 acre in size to encompass as many of the largest trees as possible. These larger patches would be treated (snag and CWD creation) and counted as two 0.25 acre patches within the unit. Patches do not have to be evenly spaced throughout the units and do not have to be perfect circles when considering the effects of slope and aspect on maximizing incoming sunlight.

Species:

- Only Douglas-fir trees would be cut. All other conifer species (WH, GF, etc.) and hardwood species would be reserved.
- No trees greater than 36 inches DBHOB would be cut.

Tree Condition:

- Trees with complex structures (forked, topless, and deformities) would be reserved individually or left in clumps where possible.
- Generally, the biggest and best trees (except as above), would be left. However, if there are healthy looking intermediate trees, dominant trees could be cut instead. This would maintain as much vertical diversity as possible.