Revised South Fork Alsea Access Road Hazard Tree Removal/Roadside Enhancement and Alsea Falls Park Enhancement Projects Environmental Assessment and Finding of No Additional Significant Impact

Environmental Assessment Number OR-080-07-03

July 16, 2010

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

Responsible Agency:	USDI - Bureau of Land Management
Responsible Official:	John Huston, Acting Field Manager Marys Peak Resource Area 1717 Fabry Road SE Salem, OR 97306 or (503) 315-5968
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Abstract: This environmental assessment (EA) discloses the predicted environmental effects of two projects on federal land located in Township 14 South, Range 6 West, Section 31, Township 14 South, Range 7 West, Sections 21, 23, 25, 26 and 36; and Township 15 South, Range 6 West, Sections 5 and 6; Willamette Meridian and within the Upper Alsea River and Marys River Watersheds.

- Project 1 (Roadside Hazard Tree Removal/Roadside Enhancement) is a proposal to remove immediate and potentially future hazard trees and reduce fuel loadings and fire hazard risk adjacent to a backcountry byway [South Fork Alsea Access Road (Rd. # 14-6-34.1)].

- Project 2 (Park Enhancement) is a proposal to remove hazard trees, enhance stand health in addition to providing a visually appealing and safe park for visitors within the Alsea Falls Recreation Site.

The actions would occur within Late-Successional Reserve (LSR), Riparian Reserve (RR) and Matrix 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/AE-10//020+1792

FINDING OF NO ADDITIONAL SIGNIFICANT IMPACT

Introduction

The Bureau of Land Management (BLM) published the *South Fork Alsea Access Road Hazard Tree Removal/Roadside Enhancement and Alsea Falls Park Enhancement Environmental Assessment (*EA) (EA# OR080-07-03) in December of 2008. Comments received on the EA were reviewed and as a result, the BLM revised the *South Fork Alsea Access Road Hazard Tree Removal/Roadside Enhancement and Alsea Falls Park Enhancement EA.* The *South Fork Alsea Access Road Hazard Tree Removal/Roadside Enhancement and Alsea Falls Park Enhancement Revised EA* is attached to and incorporated by reference in this Finding of No Additional Significant Impact determination (FONASI). The analysis in this revised EA is site-specific and supplements analyses found in the *Salem District Proposed Resource Management Plan/Final Environmental Impact Statement,* September 1994 (RMP/FEIS).

The proposed roadside hazard tree removal/roadside enhancement and park enhancement activities 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 Salem District (*EA Section 1.3*). Consultation with the U.S. Fish and Wildlife Service and National Marine Fisheries Service is described in Section 6.1 of the revised EA.

The projects are located within the Upper Alsea River and Marys River fifth-field watersheds. The projects are on BLM managed lands in Township 14 South, Range 6 West, Section 31, Township 14 South, Range 7 West, Sections 21, 23, 25, 26 and 36; Township 15 South, Range 6 West, Sections 5 and 6; Willamette Meridian.

The revised EA and FONASI will be made available for public review from July 14, 2010 to July 29, 2010. The notice for public comment will be published in a legal notice in the *Gazette Times* newspaper. Written comments should be addressed to Trish Wilson, Field Manager, Marys Peak Resource Area, 1717 Fabry Road S., Salem, Oregon 97306. Emailed comments may be sent to OR_Salem_Mail@blm.gov. Attention: Trish Wilson.

Finding of No Additional Significant Impact

Based upon review of the Revised South Fork Alsea Access Road Hazard Tree Removal/Roadside Enhancement and Alsea Falls Park Enhancement EA and supporting documents, I have determined that the proposed action is not a major federal action and would not significantly affect the quality of the human environment, individually or cumulatively with other actions in the general area. No site-specific environmental effects meet the definition of significance in context or intensity as defined in 40 CFR 1508.27. Therefore, supplemental or additional information to the analysis done in the RMP/FEIS through a new environmental impact statement is not needed. This finding is based on the following information:

Context: : Potential effects resulting from the implementation of the proposed action have been analyzed within the context of the Upper Alsea River and Marys River 5th-field Watersheds and the project area boundaries. The proposed action would occur on approximately 174 acres of LSR, RR and Matrix LUA land, encompassing less than 0.01 percent of the forest cover within the Upper Alsea River and less than 0.006 percent of the forest cover within the Marys River Watershed [40 CFR 1508.27(a)].

Intensity:

1. The resources potentially affected by the proposed thinning activities are: air quality, fire hazard/risk, fish species/habitat (except ESA listed species/habitat), invasive, non-native plant species, migratory birds, other special status species / habitat – wildlife, recreation, soils, threatened or endangered species – northern spotted owl, visual resources, water quality, and wildlife habitat components. The effects of hazard tree removal and density management are unlikely to have significant adverse impacts on these resources [40 CFR 1508.27(b) (1)] for the following reasons:

   - *Project design features* described in *(EA section 2.2.2)* would reduce the risk of effects to affected resources to be within RMP standards and guidelines and to be within the effects described in the RMP/EIS.

   - *Vegetation and Forest Stand Characteristics (EA section 3.1.2):* No special status vascular plant species or bryophytes would be affected.

     Noxious Weeds - While the number of plants may increase in the short term, any increase that does occur should be short lived because all areas with ground disturbing activities would be grass seeded with Oregon Certified (blue tagged) red fescue (*Festuca rubra*) at a rate equal to 40 pounds per acre or sown/planted with other native species as approved by the resource area botanist. Implementation of the Marys Peak integrated non-native plant management plan allows for early detection of non-native plant species which allows for rapid control and generally these species often persist for several years after timber harvest but soon decline as native vegetation increases within the project areas. In addition, all road construction and road maintenance areas would be monitored for Scot's broom infestations and eradicated. Other species would be eradicated as funding allows. No significant increase in populations of the noxious weed (invasive/non-native) species identified during the field surveys is expected to occur.

     Stands proposed for harvest activities are not presently functioning as late-successional old growth habitat.

     Carbon Sequestration (Storage) and Climate Change (EA section 3.1.8)

     The South Fork Alsea Access Road Hazard Tree Removal/Roadside Enhancement EA (OR-080-07-03) (EA) tiered to the PRMP FEIS (1994) which concluded that all alternatives analyzed in the FEIS, in their entirety including all timber harvest, would have only slight (context indicates that the effect would be too small to calculate) affect on CO2 levels.

     The following show quantities of carbon in forest ecosystem vegetation[1] in the Coast Range, and in the project area.

     - Total carbon, forest ecosystem vegetation, Pacific northwest, Coast Range 1.8-2 Giga-tonnes (Gt) (Hudiburg, et al. 2009).
     - Total carbon, forest ecosystem vegetation, South Fork Alsea River Hazard Tree Removal and Park Enhancement Project stands = 5,81*0* tonnes or 0.0001676 Gt. This represents *.001%* of the Coast Range total.
     - The annual carbon accumulation from forest management in the United States is 191 million tonnes. Current management on BLM-managed lands in western Oregon

[1] Carbon contained in both above ground and below ground parts of trees and forest vegetation, and downed wood, litter and duff. It does not include mineral carbon in soil, nor fossil fuels.

would result in an average annual accumulation of 1.69 million tonnes over the next 100 years, or 0.9% of the current U.S. accumulation. (WOPR, p. 4-537).

Carbon emissions resulting from the proposed action would total 223 tonnes. Current global emissions of carbon dioxide total 25 billion tonnes of carbon dioxide (IPCC 2007, p. 513), and current U.S. emissions of carbon dioxide total 6 billion tonnes (EPA 2007, p 2-3). Therefore, the emissions from the proposed action would constitute .000000009% of current global emissions and .00000004% of current U.S. emissions.

Tree growth following harvest would offset greenhouse gases and result in net storage of 89 tonnes of carbon. The WOPR EIS (p. 4-538), which is incorporated here by reference, states that by 2106, the No Action Alternative (management under the 1995 RMP) would result in a total carbon storage of approximately 628 million tonnes, 9% higher than average historic conditions (576 million tonnes, WOPR, 3-224, as reanalyzed in November 6, 2009 memo, on file, Marys Peak Resource Area). The incremental effect of the proposed action, over time, would be net storage of carbon.

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

- *Hydrology; Beneficial Uses, Fisheries and Aquatic Habitat; and Soils (EA sections 3.1.3 to 31.5)*:

The creation of yarding corridors and the mechanical removal of trees are unlikely to significantly increase sedimentation into project area streams because harvest generated slash would be maintained in the yarding corridors minimizing the need for machines to travel on bare soil. Also, ground-based equipment would only be allowed on slopes less than 35 percent. Ground-based skidding would occur during periods of low soil moisture with little or no rainfall, in order to minimize soil compaction and erosion.

Tree removal is not proposed on steep, unstable slopes where the potential for mass wasting adjacent to streams is high. Therefore, increases in sediment delivery to streams due to harvest activities and mass wasting are unlikely to result from this action. In addition, SPZs in riparian areas have high surface roughness, which can function to trap any overland flow and sediment before reaching streams. For the protection of stream channels and aquatic resources, riparian buffers or no-treatment zones were applied to all stream channels and "high water table areas" (small wet areas, ponds, marshes, etc.) in the project area (EA section 3.2.3.2).

Since the project areas are located below the elevation zone normally subject to transient snow accumulations in the winter, the small reduction in stand density is unlikely to result in any increase in snow accumulation and melting during ROS events. The project acres shown below reflect that 0.1 percent of the Upper Alsea River and 0.006 percent of the Marys River Watershed would be impacted. In reality only a small portion of each area in the Alsea Falls Park and along the roads would have activities. This would lead to a smaller impact than the

0.1 percent level in the South Fork Alsea River Watershed and would not be measurable in either of the watersheds. Therefore, this proposal is unlikely to result in any detectable changes in peak flows.

Retention of the SPZ buffer 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 in-stream temperatures at the site (Wegner 2007). Based on the shade sufficiency analysis, the hydrology report water quality analysis and the project design features, the proposed action is unlikely to affect fish habitat downstream.

Soils: (EA section 3.1.4). Approximately 70 percent of the activity in this proposal would be carried out from the existing roadways in the project areas. The effects to soils on those areas away from the road surfaces would be limited to tracked machinery (harvester/forwarder) and this equipment would operate on dry soils with some slash component which would result in no measurable increase in soil compaction. The felling of trees as scattered individuals would have no visible or detectable effect on soil physical properties such as bulk density.

Special Status Species: (EA section 3.2.1). These projects would not directly affect any SS vascular plant, lichen, bryophyte or fungi species since there are no known sites within the project area or adjacent to the project. However, thinning dense stands would provide habitat for SS botanical and fungal species known from forests with larger diameter trees at an earlier age since thinning dense stands can allow for increased secondary conifer growth and allow for the development of the understory and shrub species.

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

Wildlife (*EA section 3.1.6*): The hazard tree removal and park enhancement treatments would maintain the functionality of the mid-seral forests within this landscape. There would be no discernable change in landscape conditions, since only about 174 acres would be affected in several small treatment units that are scattered across several parcels of BLM managed lands within these watersheds. No special habitats would be affected by Project 1 or Project 2. There would be no anticipated disturbance to spotted owls since there are no known nest sites within 0.25 miles of the proposed units in Project 1 and Project 2. The proposed action (Project 1 and 2) would not affect marbled murrelet suitable habitat nor designated critical habitat. The effects to riparian associated wildlife species is likely to be negligible since forest habitat conditions would be maintained and since the treatment units are very small and scattered across several BLM managed parcels.

Air Quality and Fire Hazard/Risk (EA section 3.1.7): Fuel loading, risk of a fire start and the resistance to control a fire, would all increase to a small degree at the sites. Slash created from timber harvest would add an estimated 1 to 5 tons per acre of dead fuel to the areas where selected hazard trees are cut.

Risk of a fire start in the untreated slash would be greatest during the first season following cutting, - the period when needles dry out but remain attached. These highly flammable “red needles” generally fall off within one year and risk of a fire start greatly diminishes. Fire risk would continue to diminish as the area "greens up" with under story vegetation, and as the fine twigs and branches in the slash begin to break off and collect on the soil surface.

The total amount of slash debris expected to be piled for burning is estimated to be less than 100 tons from the treated areas along the road. Burning less than 100 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. Burning of slash would be coordinated with Oregon Department of Forestry in accordance with the Oregon State Smoke Management Plan which serves to coordinate all forest burning activities on a regional scale to prevent cumulative negative impacts to local and regional air sheds.

Visual Resources and Recreation (EA section 3.2.2): Removing a portion of trees within 100 feet of the Byway would reduce the hazard and potentially increase the sight distance in areas where trees are dense. Recreational use of the project areas would be restricted in the short-term during operations. The long-term seasonal operation of facilities at Alsea Falls Recreation Area of early May to September 30 would not change and year round foot and bicycle access would continue on trails. A recreational forest setting would remain.

The removal of some trees would have a minimal impact to the quality of the whole viewshed. Visitors would notice overall management of the trees and disturbance to vegetation, increased sight distance, and experience safer driving conditions. Chipping slash would contribute to a visually pleasing park setting and keep the recreation site managed as a fire suppression and fuels management area, reducing fire hazards and protecting investments. Timber management at Alsea Falls Recreation Site would allow the desired regeneration of the forest canopy by removing hazardous or suppressed trees so the remaining trees can thrive.

Public health or safety [40 CFR 1508.27(b)(2)]: The project's effects to public health and safety would not be significant because: Public safety along haul routes would be minimally affected because log truck traffic from forest management activities on both private and public land is common and because project design features such as speed limits and warning signs near logging activities would provide for public safety.

2. The proposed thinning activities:
   a. Would not affect
      (1) unique characteristics of the geographic area [40 CFR 1508.27(b)(3)] - There are no parklands, prime farmlands, wild and scenic rivers, wilderness, or ecologically critical areas located within the project area (*EA Section 3.1, Table 3);*
      (2) 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, Table 3).*
   b. *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)].
   c. *Do not set a precedent* for future actions that may have significant effects, nor does it represent a decision in principle about a future consideration [40 CFR 1508.27(b) (6)].
   d. *Are not expected to adversely affect Endangered or Threatened Species* listed under the Endangered Species Act (ESA) of 1973 [40 CFR 1508.27(b) (9)].

   ESA Wildlife - Northern spotted owl (EA Section 3.2.6):.There would be no anticipated disturbance to spotted owls since there are no known nest sites within 0.25 miles of the proposed units in Project 1 and Project 2. Over the years of spotted owl monitoring, owls have been detected foraging within 0.25 miles of the proposed hazard tree units in Section 21, 23, and 26. But neither Project 1 nor 2 would affect the suitable habitat conditions available for

spotted owls in this area. Projects 1 and 2 would slightly alter but maintain the dispersal habitat quality of the mid-seral stands that are treated. About 110 acres of this dispersal habitat lies within OMOCA-36. The proposed action is considered a may affect, but not likely adverse affect to this designated critical habitat.

Marbled Murrelet
The proposed action (Project 1 and 2) would not affect marbled murrelet suitable habitat nor designated critical habitat. Some of the proposed treatment units in Project 1 lie within 0.25 mile of unsurveyed suitable habitat for murrelets. However, no noise disturbance is anticipated since the proposed action would be restricted to occur outside of the marbled murrelet critical nesting season.

ESA Fish – Project 1
The proposed action, with the incorporation of project design features, is considered a "may affect" to ESA listed OC Coho Salmon for hazard tree removal from stream protection zones within 1 mile of listed fish habitat or within 150 feet of listed fish habitat. A 'may affect' determination indicates consultation with NMFS for this project is required. The proposed project would comply with project design features as described under the programmatic Biologic Opinion resulting from the *Biological Assessment for Programmatic Forest Service and Bureau of Land Management Activities in Northwest Oregon* (May 2, 2008). Actions and effects beyond the scope of the NMFS programmatic consultation would require additional consultation with NMFS.

Project 2
The proposed action, with the incorporation of project design features, is considered a "may affect" to ESA listed OC Coho Salmon. A 'may affect' determination indicates consultation with NMFS for this project is required. Compliance of the thinning project with guidance described in *Endangered Species Act Section 7 Informal Consultation for the 2008-2009 North Coast Province Thinning Timber Sales Programmatic on Portions of the Siuslaw National Forest and Eugene and Salem Districts of the Bureau of Land Management, Seven Watersheds within the Oregon Coast Recovery Domain* (NMFS 2008) would provide consultation coverage for the May Affect actions of the Alsea Falls Park Enhancement thinning activities.

The proposed water system replacement project would comply with project design features as described under the programmatic Biologic Opinion resulting from the *Biological Assessment for Programmatic Forest Service and Bureau of Land Management Activities in Northwest Oregon* (May 2, 2008). Actions and effects beyond the scope of the programmatic consultation would require additional consultation with NMFS.

Protection of Essential Fish Habitat (EFH), as described by the Magnuson/Stevens Fisheries Conservation and Management Act, and consultation with NMFS is required for all projects which may adversely affect EFH of Chinook or coho salmon in the action area. The South Fork Alsea River is considered EFH to Alsea Falls.

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e. *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)] (*EA Section 1.3*).

(1) The Interdisciplinary Team (IDT) evaluated the project area in context of past, present and reasonably foreseeable actions [40 CFR 1508.27(b) (7)] and determined that there is not a potential for cumulative effects on the affected resources (*EA Section 4.-0*).

Approved by: _____ _____

John Huston, Date

Marys Peak Resource Area Acting Field Manager

Glossary: Abbreviations, Acronyms, and Terms

ACS	Aquatic Conservation Strategy
Access Road	A through route linking two federal or state highways
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.
Bureau Sensitive Species (BS)	All federal candidates, state listed T&E, or De-listed Federal species and generally Oregon Heritage listed 1 and 2 species
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	To change the structure, and possibly the composition and function of a stand of trees by either increasing the number of trees per acre through planting, or by decreasing the existing tree density through cutting. Usually occurs with LSR and RR LUAs.
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 Threatened and Endangered (T&E) Species	All species listed by the Federal Government as Threatened or Endangered.
FEIS	Final Environmental Impact Statement
FLPMA	Federal Land Policy Management Act
FONSI	Finding of No Additional 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
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
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).
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.
Skid Trails	Path through a stand of trees on which ground-based equipment operates.
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 would be removed and heavy machinery would not be allowed. The minimum distance is 50 feet.
Special Status Species	Collectively, any plant or animal species which is federally listed or proposed for listing under the ESA, and BLM Sensitive species (BLM manual 6840 – Special Status Species Management).
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.
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.

Revised South Fork Alsea Access Road Hazard Tree Removal/Roadside Enhancement and Alsea Falls Park Enhancement Projects
Environmental Assessment

Table of Contents

1.0 Introduction

1.1 Projects Covered in this EA

This Environmental Assessment (EA) is a revision of the South Fork Alsea Access Road Hazard Tree Removal/Roadside Enhancement and Alsea Falls Park Enhancement EA (original EA) that was published and made available for public review from January 5, 2009 to February 3, 2009. The original South Fork Alsea Access Road Hazard Tree Removal/Roadside Enhancement and Alsea Falls Park Enhancement EA is incorporated by reference.

The purpose of the revised EA, hereafter referred to as this EA, is to respond to the comments received on the original EA.

This EA will analyze the impacts of proposed roadside hazard tree removal/roadside enhancement and park enhancement and connected actions on the human environment in the Upper Alsea River and Marys River fifth field watersheds. The EA will provide the decision-maker, the Marys Peak Resource Area Field Manager, with current information to aid in the decision-making process. It will also determine if there are significant impacts not already analyzed in the Environmental Impact Statement for the Salem District's Resource Management Plan and whether a supplement to that Environmental Impact Statement is needed or if a Finding of No Additional Significant Impact is appropriate.

Section 1 of this EA for the roadside hazard tree removal/roadside enhancement and park enhancement projects provide a context for what will be analyzed in the EA, describes the kinds of action we will be considering, defines the project areas, describes what the proposed actions need to accomplish, and identifies the criteria that we will use for choosing the alternative that will best meet the purpose and need for this proposal.

This June 2010 revision of the EA addresses Carbon Sequestration (Storage) and Climate Change.

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

- Project 1, South Fork Alsea Access Road Hazard Tree Removal/Roadside Enhancement is a proposal to cut and remove immediate and potentially future hazard trees and reduce fuel loadings and fire hazard risk adjacent to a BLM managed access road/backcountry byway [South Fork Alsea Access Road (Rd. # 14-6-34.1)]. The project would occur on approximately 115 acres of 45 to 55 year old stands within LSR (Late Successional Reserve), RR (Riparian Reserve) and Matrix LUAs (Land Use Allocations).
- Project 2, Alsea Falls Park Enhancement is a proposal to enhance stand health in addition to providing a visually appealing and safe park for visitors within the Alsea Falls Recreation Site. The project would occur on approximately 21 acres of 50 to 60 year old stands within LSR and RR LUAs. The project would also replace approximately 2,500 feet of existing underground pipe that supply water to the Alsea Falls Recreation Site.

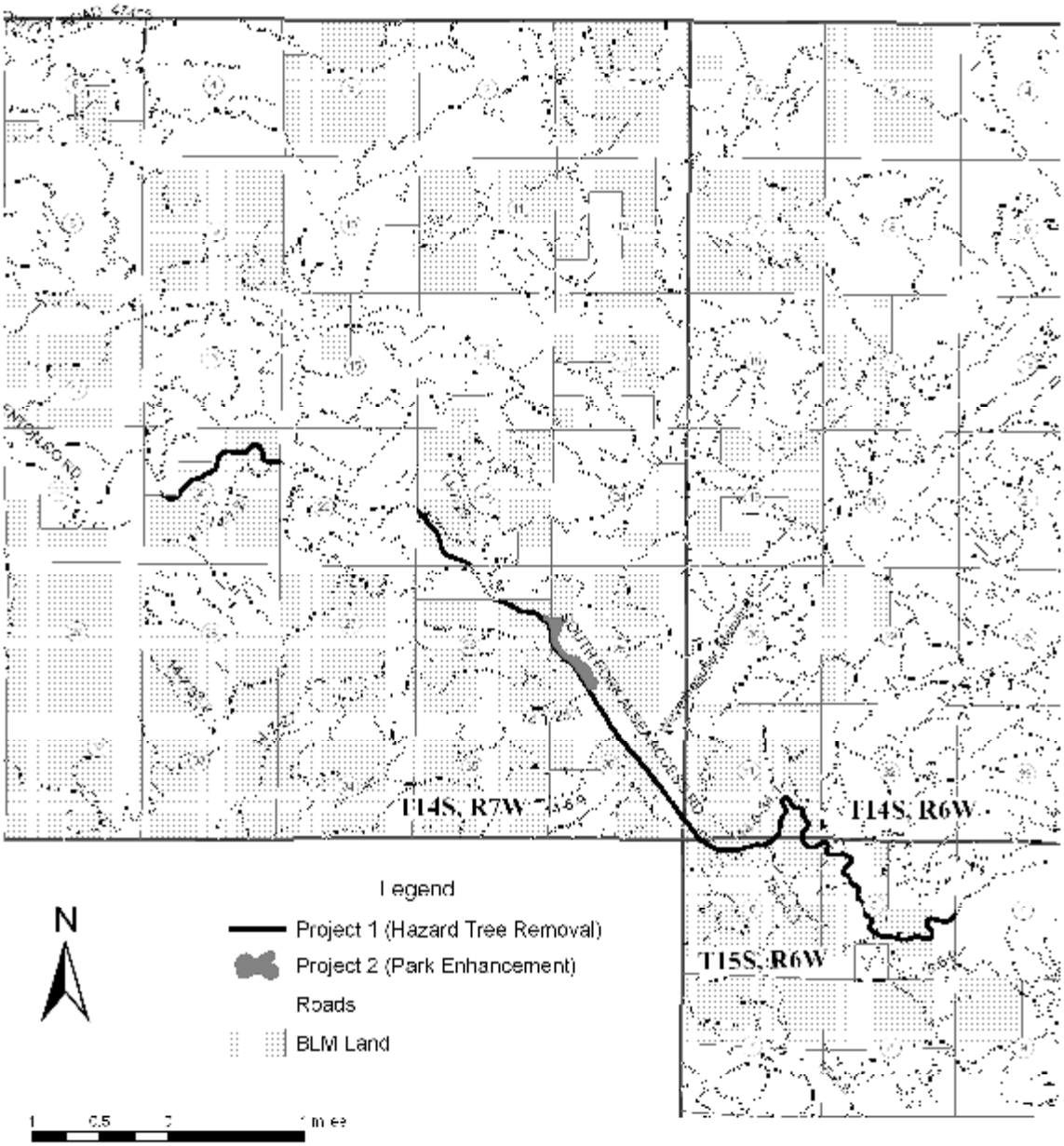
1.2 Project Area Locations

Township 15 South, Range 6 West, Sections 5 and 6; Township 14 South, Range 6 West, Section 31; Township 14 South, Range 7 West, Sections 21, 23, 25, 26 and 36, Willamette Meridian located approximately 9 miles southwest of Alsea, Oregon.

The South Fork Alsea Hazard Tree Removal/Roadside Enhancement and Alsea Falls Park Enhancement Project areas are in the Upper Alsea River and Marys River 5th-field Watersheds which drain into the Alsea River and the Willamette River respectively.

UNITED STATES DEPARTMENT OF THE INTERIOR
Bureau of Land Management
Salem District - Oregon

SOUTH FORK ALSEA RIVER ACCESS ROAD HAZARD TREE REMOVAL/ROADSIDE ENHANCEMENT
and ALSEA FALLS PARK ENHANCEMENT
PROJECT LOCATIONS MAP



1.3 **Conformance with Land Use Plans, Policies, and Programs**

The proposed action is in conformance with the following documents:

- *Salem District Record of Decision and Resource & Management Plan* (RMP), dated May 1995; as amended: The RMP has been reviewed and it has been determined that the proposed thinning activities conform to the land use plan terms and conditions (e.g. complies with management goals, objectives, direction, standards and guidelines) as required by 43 CFR 1610.5 (BLM Handbook H1790-1). Implementing the RMP is the reason for doing these activities (RMP p.1-3)
- *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl* and *Standard and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl*, dated April, 1994; (the Northwest Forest Plan, or NWFP),
- *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)

The analysis in the South Fork Alsea Access Road Hazard Tree Removal/Alsea Falls Park Enhancement EA is site-specific and supplements analyses found in the *Salem District Proposed Resource Management Plan/Final Environmental Impact Statement*, September 1994 (RMP/FEIS). The RMP/FEIS includes the analysis from the *Final Supplemental Environmental Impact Statement on Management of Habitat for Late-Successional and Old-Growth Forest Related Species within the Range of the Northern Spotted Owl*, February 1994 (NWFP/FSEIS). In addition, the EA is tiered to 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).

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

All of the above documents are hereby incorporated by reference in the South Fork Alsea Access Road Hazard Tree Removal/Alsea Falls Park Enhancement EA and are available for review in the Salem District Office. Additional information about the proposed projects are available in the South Fork Alsea Access Road Hazard Tree Removal/Alsea Falls Park Enhancement EA Analysis File (NEPA file), also available at the Salem District Office.

1.4 **Survey and Manage Review**

The South Fork Alsea Access Road Hazard Tree Removal/Alsea Falls Park Enhancement projects are consistent with court orders relating to the Survey and Manage mitigation measure of the Northwest Forest Plan, as incorporated into the Salem District Resource Management Plan.

On December 17, 2009, the U.S. District Court for the Western District of Washington issued an order in *Conservation Northwest, et al. v. Rey, et al.*, No. 08-1067 (W.D. Wash.) (Coughenour, J.), granting Plaintiffs' motion for partial summary judgment and finding a variety of NEPA violations in the BLM and USFS 2007 Record of Decision eliminating the Survey and Manage mitigation measure. Previously, in 2006, the District Court (Judge Pechman) had invalidated the agencies' 2004 RODs eliminating Survey and Manage due to NEPA violations. Following the District Court's 2006 ruling, parties to the litigation had entered into a stipulation exempting certain categories of activities from the Survey and Manage standard (hereinafter "Pechman exemptions").

Judge Pechman's Order from October 11, 2006 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."

Following the Court's December 17, 2009 ruling, the Pechman exemptions are still in place. Judge Coughenour deferred issuing a remedy in his December 17, 2009 order until further proceedings, and did not enjoin the BLM from proceeding with projects (including timber sales). Nevertheless, I have reviewed the South Fork Alsea Access Road Hazard Tree Removal/Alsea Falls Park Enhancement projects are consideration of both the December 17, 2009 and October 11, 2006 order. Because the South Fork Alsea Access Road Hazard Tree Removal/Alsea Falls Park Enhancement projects entail no regeneration harvest and entails thinning only in stands less than 80 years old, I have made the determination that these projects meet Exemption A of the Pechman Exemptions (October 11, 2006 Order), and therefore may still proceed to be offered for sale even if the District Court sets aside or otherwise enjoins use of the 2007 Survey and Manage Record of Decision since the Pechman exemptions would remain valid in such case. The first notice for sale will appear in the newspaper on August 24, 2010.

1.5 **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 4.0 of the EA shows how the South Fork Alsea Access Road Hazard Tree Removal/Road Enhancement and Alsea Falls Park Enhancement Projects meet the Aquatic Conservation Strategy in the context of PCFFA IV and PCFFA II.

1.6 **Decision Criteria/Project Objectives for Each Project**

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

- Meet the purpose and need of the projects (EA section 1.6).
- Comply with the *Salem District Record of Decision and Resource Management Plan*, May 1995 (RMP) and related documents which direct and provide the legal framework for management of BLM lands within the Salem District (EA section 1.3).
- Would not have significant impact on the affected elements of the environment beyond those already anticipated and addressed in the RMP EIS.

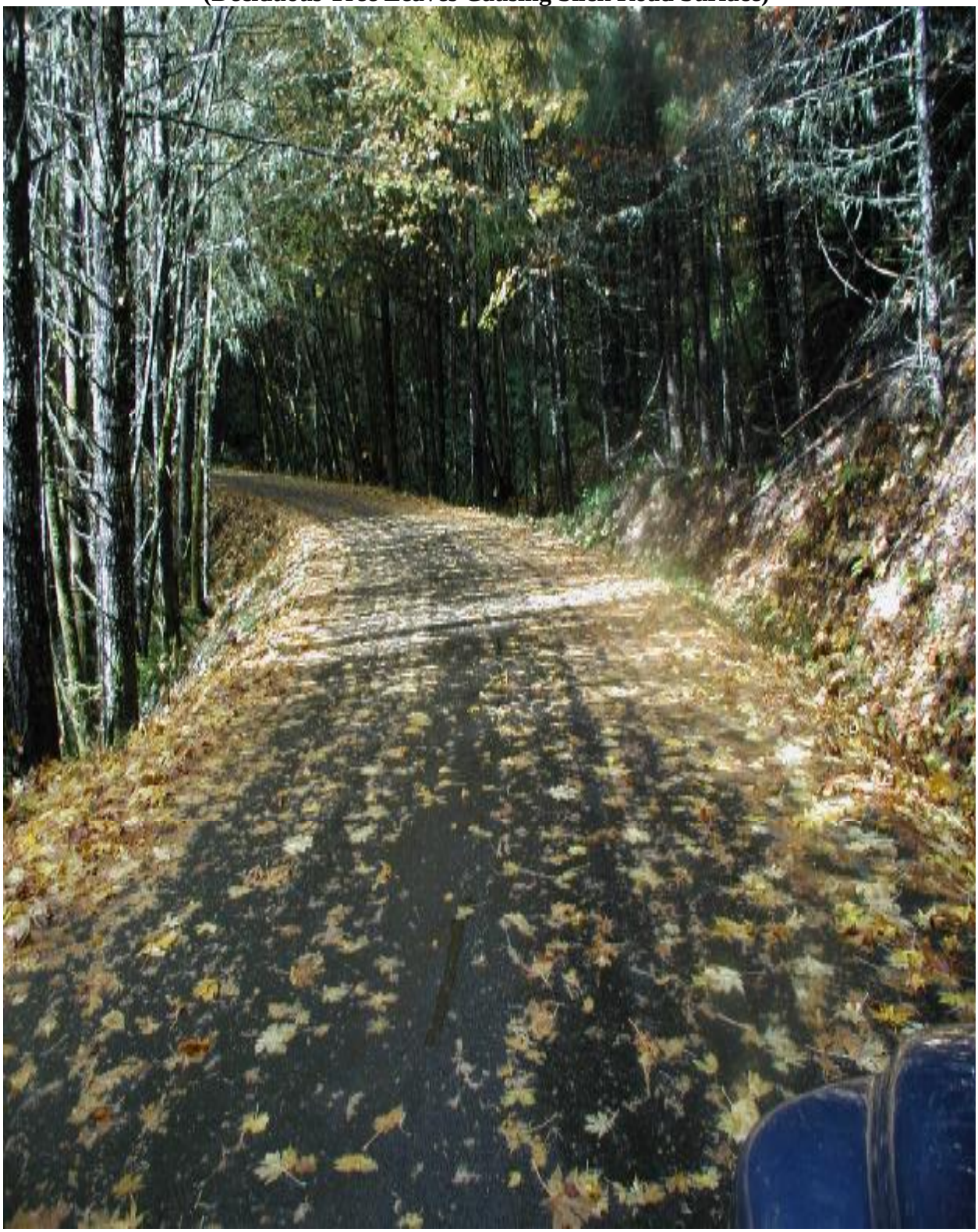
1.7 **Results of Scoping**

A scoping letter, dated April 16, 2008, was sent to 21 potentially affected or interested individuals, groups, and agencies. In addition to the scoping letter, a press release informing and soliciting public input was sent to the Gazette Times Newspaper on May 1, 2008 and posters were placed on bulletin boards within the Alsea Falls Recreation Site for Project 2 from May 1, 2008 to August 1, 2008. Four responses were received during the scoping period.

North Fork Alsea River Access Road Hazard Tree Removal Project
(Completed Summer 2008)

Revised South Fork Alsea Access Road Hazard Tree Removal/Roadside Enhancement Project
(Leaning Deciduous Trees)

Revised South Fork Alsea Access Road Hazard Tree Removal/Roadside Enhancement Project
(Deciduous Tree Leaves Causing Slick Road Surface)



1.8 **Purpose of and Need for Action**

Project 1 (South Fork Alsea Access Road Hazard Tree Removal/Roadside Enhancement)

The BLM proposes forest management activities within 100 feet on each side of the South Fork Alsea Access Road (14-6-34.1). These activities would include hazard tree removal, roadside vegetation enhancement, and treatment of fuels by various methods on approximately 153 acres. The LUAs for these activities are LSR, Matrix and RR.

After 40 years of tree growth adjacent to the South Fork Alsea Access Road/Backcountry Byway (Road # 14-6-34.1) the frequency of problems associated with windfall, snow and ice loaded tree and limb fall has increased to the point where safety hazards have been created to road users. Those safety hazards (falling trees, snapping tops and limbs, heavy leaf litter) conflict with the BLM's designation of the road as an access road and backcountry byway. The trees have grown beyond brush size and now lean toward, and often over the roadbed. The BLM road maintenance crew performs frequent winter maintenance (removing fallen trees and limbs) on the road. The time spent to cleanup this road debris reduces the ability to repair, maintain and improve infrastructure (i.e. culvert installs, rocking, other drainage repairs etc) on BLM administered roads which is critical in promoting the overall health of the ecosystem.

The following describe the purpose for the action:

- **Roads (RMP p. 62) :** Maintain and develop a safe, efficient and environmentally sound road system to:
  - ü Provide appropriate access for timber harvest and silvicultural practices.
  - ü Provide for safe public access on a one lane heavily used BLM managed access road.
  - ü Reduce environmental effects associated with identified existing roads within the project area.
  - ü Reduce the risk of a fire start along a BLM managed access/backcountry byway road.

There is a need to:

- Reduce hazards to the public by removing trees that have the potential to fall or drop larger limbs (trees with hazard rating of imminent and likely) and those likely to succumb to density mortality within a decade or two, and susceptible trees adjacent to disease centers that could reach the access road.
- Reduce the proportion of hardwood trees which cause slick road surface conditions from heavy leaf litter.
- Reduce road maintenance costs by removing imminent and likely hazard trees before they create immediate hazards.
- Treat existing and newly created slash and space out tree crowns to reduce the risk of a fire start, provide areas with a lower rate of spread, lower resistance to control and lower fire intensity from which to control any fire that occurs in the surrounding area.
- Improve sight distance for vehicular traffic.

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

Alsea Falls Recreation Site (Pre-Treatment)

Project 2 (Alsea Falls Park Enhancement)

The BLM proposes density management treatment on approximately 21 acres of stands that would improve scenic resources, enhance visitor recreation experiences and satisfy public land users.

The project area is currently dominated by a 50 to 60 year old Douglas-fir forest with scattered and clumped western hemlock and various hardwoods where growth rates are declining and structural diversity is limited. This second-growth forest is characterized by a single-layered, moderately dense, overstory canopy. Small areas of Douglas-fir mortality from laminated root rot occur in the project area, as well as other root rot affecting western hemlock. The project area is located in Township 14 South, Range 7 West, Sections 25 and 26.

In addition, there are approximately 2,500 feet of existing underground pipe that supply water to the Alsea Falls Recreation Site that would be replaced. The existing deteriorating pipe is over 40 years old and requires maintenance to keep the water system up to current health standards.

The following describes the purpose for the action:

- Manage scenic and natural resources to enhance visitor recreation experiences and satisfy public land users (RMP pp. 41 to 43) by:
  - Removing hazard trees along trails and in developed recreation areas;
  - Continuing to operate and maintain developed recreation sites and trails;
  - Designating developed recreation sites as fire suppression areas and fire fuel management areas;
  - Managing timber within developed recreation sites for purposes of providing space for activity areas, and providing desired regeneration of the forest canopy.
- Enhance recreation opportunities provided by existing national back country byways by:
  - Continuing to facilitate, manage and promote public use of the South Fork Alsea River National Back Country Byway (RMP p. 44).

There is a need to:

- Remove trees that create a hazard (all trees with hazard rating of-imminent and likely , and those likely to succumb to density mortality within a decade or two) within the recreation site;
- Create a stand that gives a pleasing visual experience of large, full-crowned trees, stand complexity featuring a range of tree sizes and densities, multiple canopy levels that provides visual screening, and visually shows little evidence of management (stumps, skid trails, intentional spacing);
- Maintain species diversity by retaining most hardwoods and western hemlock, and all western red cedar;
- Reduce incidence and impact of root and stem decays by removing susceptible trees adjacent to disease centers;
- Manage timber within recreation sites to reduce fuel levels and rate of spread;
- Reduce the likelihood for contaminants to enter into the water system that supplies the recreation site by replacing approximately 2,500 linear feet of underground water lines.

Except for the replacement of approximately 2,500 feet of underground water lines, the projects would be accomplished by offering timber sales. The replacement of the water lines would be accomplished when funding becomes available.

2.0 Alternatives

2.1 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. This EA will analyze the effects of the Alternative 1 (Proposed Action) and Alternative 2 (No Action).

2.2 Alternative 1 (No Action)

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

2.3 Alternative 2 (Proposed Action)

Project 1 (South Fork Alsea Access Road Hazard Tree Removal/Roadside Enhancement)

The project would remove hazard trees within 100 feet on each side of the South Fork Alsea Access Road (14-6-34.1) on BLM managed lands. With the exception of five snags greater than 36 inches diameter breast height outside bark (DBHOB) that would be cut and left on site in Section 26 (as shown on EA Map), trees targeted for removal would be less than 80 years old and could be of any size (DBHOB). Hazard trees would be defined as:

- any trees leaning into, or over the roadbed;
- deciduous trees with canopies overtopping the roadway;
- trees with conditions of likely or imminent failure potential that pose a danger to people or improvements under prescribed analysis in the Field Guide for Danger Tree Identification and Response (USDA USDI, 2008 (EA Appendix 2).

The project would also provide roadside enhancement by:

- Removing suppressed conifer and deciduous trees;
- Retaining any large snags that are felled as hazard trees unless they fall across the road surface or cut bank;
- Reducing the fire hazard and visual impacts by treating the majority of the logging debris.

Project 2 (Alsea Falls Park Enhancement)

This project consists of density management treatments on approximately 21 acres of 50 to 60 year old stands within LSR and RR LUAs. The areas would be thinned primarily from below to a variable density, retaining about 20 percent of lower half of diameter classes. Trees would be yarded using ground-based equipment.

Approximately 2,500 linear feet of existing 40 year old underground water lines would be replaced with new water lines. New pipes would be installed underground in the general vicinity of the old lines.

2.3.1 Project Design Features for Projects 1 and 2

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

Table 1: Season of Operation/Operating Conditions

Season of Operation or Operating Conditions	Applies to Operation	Objective
During periods of low recreation use, (Labor Day to early May)	All cutting, yarding and slash treatment operations	Maintain the quality of recreation experience and use of the backcountry byway
August 6 to March 31	Operation of power equipment	Minimize noise disturbance (marbled murrelet)
Generally year round	Timber hauling would be allowed year-round on paved roads	Minimize soil erosion/stream sedimentation
During periods of low soil moisture, generally June 15 to October 31	Ground based yarding (Harvester/Forwarder)	Minimize soil erosion/compaction
During periods of low precipitation, generally May 1 to October 31	Timber hauling on unpaved road surfaces	Minimize soil erosion
During periods of low recreation use, (Labor Day to early May)	Waterline replacement within Area AF-1	Minimize noise disturbance (recreation users)
During the dry season (May 1 to October 31) or during extended dry periods (weather forecasts would be for more than a week of dry conditions)	Waterline replacement	Minimize soil erosion/stream sedimentation
During instream work period (July 1 and August 31)	Waterlines requiring trenches within stream channels	Minimize soil erosion/stream sedimentation

To protect water quality, 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:

- All logging activities would utilize the Best Management Practices (BMPs) required by the Federal Clean Water Act (as amended by the Water Quality Act of 1987) (2008 FEIS Appendix I, pp. 270 to 290).
- After operations, skid trails would be waterbarred where they are determined to be necessary by the contract administrator and blocked where they meet timber haul roads.
- The cutting and disposing of trees would be accomplished by harvester/forwarder equipment. Cutting and yarding would only be allowed utilizing rubber tired harvester/forwarder equipment. If damage to the road surfaces occur, the purchaser would be required to fix the damages as directed by the contract administrator.

- Harvester/forwarder corridors would be spaced a minimum 60 feet apart and less than 15 feet in width. The equipment would be limited to slopes less than 35 percent. Log decks may be placed off the roadbed (within ditches, shoulders and turn outs) as approved by the contract administrator.
- Stream protection zones (SPZs) where no cutting and/or yarding is permitted would be established along all streams and identified wet areas within the harvest areas. These zones would be a minimum of approximately 55 feet from the high water mark.
- To protect water quality, all trees within one tree height of SPZs would be felled away from streams.

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

- All soil disrupting equipment moved into the project area would be required to be clean and free of dirt and vegetation as directed by the contract administrator.
- All locations where mineral soil is exposed (roads to be constructed/renovated, skid trails and landings, culvert replacements/installations) would be sown with Oregon Certified (blue tagged) red fescue (*Festuca rubra*), and/or sown with a wildlife vegetation mix and applied at a rate equal to 40 pounds per acre or sown/planted with other native species as approved by the resource area botanist.

To protect and enhance ESA Habitat and EFH components:

All activities with the intent to sell timber shall be limited such that no adverse effects to ESA habitat and EFH would occur. In order to meet these conditions the following design criteria shall be incorporated:

- Unless fisheries personnel determine that large woody debris (greater than 24 inches DBHOB) for streams and Riparian Reserves in the proposed project areas are met (As defined by Watershed Analysis and NFP Standards and Guidelines), standing timber greater than 24 inches DBHOB located within Riparian Reserves would remain on site.
- Where it is safe and feasible, downed trees and portions of downed trees within the road prism that are greater than 8 inches diameter at the largest end and not removed would be moved or placed off to the stream side of the road or used for in-stream restoration projects.
- Where it is safe and feasible, actions would be taken to deter theft of large woody material in Riparian Reserves such as moving tree portions away from immediate road prism area in a manner that would make the large woody material less visible and accessible.
- Heavy equipment would be operated in a manner that minimizes sedimentation to streams. To the extent practical all equipment would operate from existing roads.
- Yarding would occur no closer than 100 feet from EFH stream channels and 55 feet on non-EFH stream channels.
- To the extent practical existing landings that are at least 200 feet from EFH stream channels and 100 feet from all other channels would be utilized. New landings would be located at least 550 feet from EFH channels and 200 feet from all other channels. Mitigate sediment transport risk (silt fences, bark bags, reseeding, etc) for landings located near EFH channels or which may be connected to EFH during the wet season.
- Landings where equipment must leave the hardened road surface would be surfaced with aggregate material for wet season use.
- Where a cut tree does fall within a SPZ, the portion of the tree within the SPZ would remain in place, except where tree falling could impede the function of a road structure (e.g. culverts, ditches, cut and fill slopes). The portion of the tree that could impede road structure

functionality and routine maintenance activities would be fully suspended and moved away from the stream and remain on site.

- Harvest operations that do not fall within these design criteria, but appear to have mitigating circumstances that would result in actions that would not adversely affect EFH should be individually reviewed and approved by the fisheries specialist.

To protect Bureau Special Status (SS) botanical, fungal and animals:

- Required pre-disturbance surveys and known-site management for any listed botanical, fungal, or animal species would be accomplished in accordance with BLM Manual 6840- *Special Status Species Management*, and. *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).
- The resource areas biologist and/or botanist would be notified if any listed botanical, fungal or animal species are found occupying stands proposed for treatment during project activities. If the species is a federal listed ESA or Category A, B or E Survey and Manage species then all of the known sites would be withdrawn from any timber harvesting activity. If the species is other than a federal listed ESA or Category A, B or E Survey and Manage species, then appropriate mitigation action would be taken.
- For any listed botanical species whose characteristics make locating them with field surveys practical, clearances would generally be done by field surveys using intuitive controlled methods, field clearances, field reconnaissance, inventories, and/or habitat examinations. Clearances for fungi are considered "not practical" and surveys are not required

To reduce hazard trees in Upland and Riparian Reserve:

- In areas infected with *Phellinus weirii*, remove symptomatic trees and all Douglas-fir trees (the most susceptible species) within 50 feet of dead or symptomatic trees. In areas *Heterobasidium annosum* infection, remove all symptomatic western hemlock trees (the most susceptible species) adjacent to improvements and frequently used areas. Where openings greater than approximately 0.25 acre are created, plant large nursery stock of non-susceptible or immune species.

To reduce visual impacts to VRM 2 designations

- The majority of debris/slash would be treated by way of chipping, piling and burning, lopping and scattering, removing from the site, or a combination of these treatments.
- Trees would be cut within 6 inches to the ground.

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.

<u>Project Design Features for Project 1 only</u>

To reduce hazard trees in Upland and Riparian Reserve:

- Approximately five snags greater than 36 inches DBHOB would be cut and left on site in Section 26 and as shown on EA Map.

To reduce fire hazard risk and protect air quality:

- Whenever possible, alternative waste recycling of slash material would be encouraged. This may be accomplished by: providing firewood to the public, chipping for co-gen power production, chipping for soil amendments, soil protection, etc.
- At least 90 percent of the ¼ inches to 10 inches diameter slash located within 30 feet of the road edge would be piled and covered for burning and/or chipped. Suitable firewood material close to the road would be separated and set aside in accessible areas adjacent to the road and made available to the public.
- All piles would be located at least ten feet away from reserve trees and snags and at least 55 feet from streams. Slash piles to be burned would be located to ensure that there is no connectivity between the location and surface runoff to a stream channel.
- Before the onset of fall rains 4 mil thickness or heavier black polyethylene plastic would be placed over the piles. Plastic would not be placed prior to August 15th of the year the piles would be burned.
- 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).
- Accumulations of debris further than 30 feet from the edge of roads would be scattered. Debris would be lopped and scattered so that 90 percent of the slash, tops and limbs would be within 24 inches of the soil surface.

Project Design Features for Project 2 only

To protect and enhance stand development and diversity:

Unit AF1 (Campground) Only

- Within Unit AF1, approximately 22 percent of existing basal area (sq. ft.) per acre would be removed to concentrate growth on remaining trees.

Unit AF2 (Day Use Area) Only

- Within Unit AF2, approximately 51 percent of existing basal area (sq. ft.) per acre would be removed to concentrate growth on remaining trees.

Both AF1 (campground) and AF2 (Day Use Area)

- The project would remove hazard trees of any size, defined as those with conditions of likely or imminent failure potential that pose a danger to people or improvements under prescribed analysis in the Field Guide for Danger Tree Identification and Response (USDA USDI, 2008) (EA Appendix 2).
- The project would also utilize the rating system commonly used for determining hazardous trees in recreational sites, Long-Range Planning for Developed Sites in the Pacific Northwest: the Context of Hazard Tree Management (1992, USDA Forest Service, Pacific Northwest Region, FPM-TP039-92). Trees are rated for their potential for failure, and the potential of the failed portion to damage a valuable target.
- Priorities for tree marking would be based on Marking Guidelines (see Silviculture Prescription Table 4 and Appendix 3). Tree selection would be designed to leave a range of diameters, increase the proportion of minor species, and retain legacy and wildlife tree structure while meeting target densities.
- Clumps would be retained through variable density thinning, and would not exceed 0.1 acre in size. However, several areas would remain untreated due to logging infeasibility and riparian buffers.
- Areas of large open-grown trees would be maintained at lower range of target residual basal area.

- Any tree found to have a stick or ball nest, regardless of size (tree or nest) would be protected, unless it is a hazard tree.
- Variability in density would be retained by removing a proportion of trees per acre and intentionally reserving a range of residual densities.
- Most hardwoods and western hemlock, and all western red cedar would be retained, thinning primarily Douglas-fir.
- The majority of the project area is in Riparian Reserve, and includes the secondary shade zone for stream shading therefore residual stand density would be maintained at 50% canopy cover or greater.
- No refueling would be allowed within 200 feet of any standing or running water (RMP, BMP C-8, C-6).

To reduce the spread of annosus root disease

- To limit the spread of annosus root disease, borax (sodium tetraborate decahydrate, a registered fungicide) would be applied by hand to the cut surface of stumps of live trees immediately following tree felling. Borax (trade name Sporax®) would be applied according to label directions. Only one application is necessary unless it is washed off by rain within a week, necessitating a second application. The fungicide would be transported and stored in a sealed container, stored 200 feet or more from flowing streams, and no more than one pound would be carried by applicator at any time. Product would be hand-applied using a shaker container with sealable cap and would be sealed while not in use.

To reduce fire hazard risk and protect air quality:

- Slash created during the logging operation would generally be left in place to be chipped after completion of logging. Any slash that falls on trails, roads, parking areas, etc. would be removed and placed with slash to be chipped in the harvest areas. The alternate disposal would be to transport slash off the site to be chipped at a central location. Equipment same as, or similar to the equipment used to yard logs would be used (e.g.: modified forwarder bunks).
- At least 90 percent of the ¼ inches to 10 inches diameter slash would be chipped with the chips being spread out on the site or removed from the site.
- For areas that are to be chipped, mechanical equipment would remain on slopes averaging 35 percent or less (unless the equipment is specifically designed to operate on steeper slopes and approved by the contract administrator).

To replace the waterlines:

- Replace approximately 2,500 linear feet of 40 year old underground water lines utilizing a large backhoe or small excavator. A trench approximately 30 inches wide by 36 inches deep would be dug and the new water lines would be installed in the ground in the general vicinity of the old lines. The water lines would be bored under existing roads so that the existing roadway would not be disturbed.

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

Activity	Alternative 1 (No Action)	Alternative 2 (Proposed Action)
Ground based yarding (acres)	0	123
Hazard tree removal/roadside enhancement (miles)	0	16
Park enhancement (acres)	0	21
Fuels reduction (acres)	0	136 (115 for Project 1 and 21 for Project 2)

2.4 Comparison of Alternatives With Regard To Purpose and Need

Table 3: Comparison of Alternatives by Purpose and Need (Project 1 only)

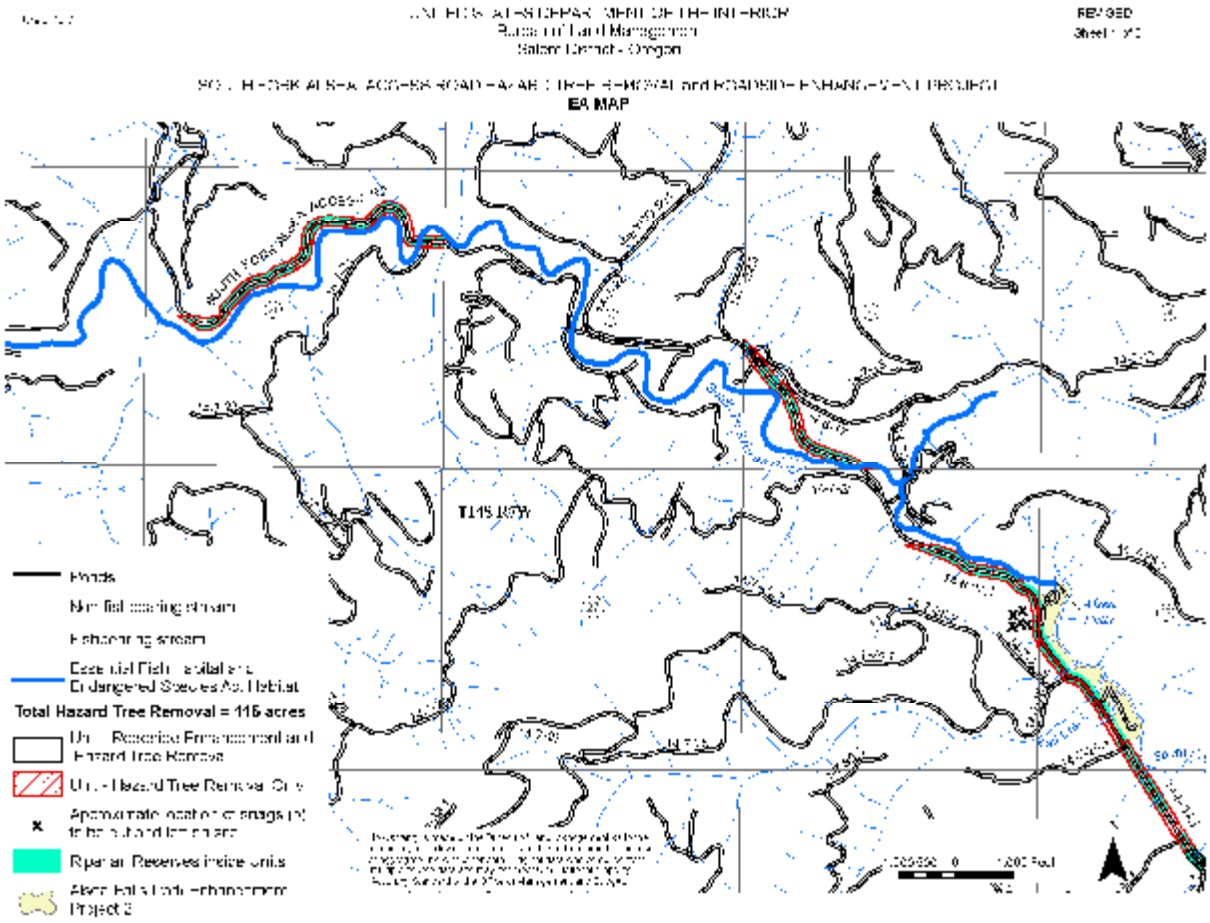
Purpose and Need (EA Section 1.6)	Alternative 1 (No Action)	Alternative 2 (Proposed Action)
Reduce hazards to the public by removing trees that are both imminent potential to fail (lean toward and often over the roadbed) and have potential for creating future hazards (suppressed trees) located adjacent to the access road. Reduce the proportion of hardwood trees (slick road surface conditions from heavy leaf litter).	Safety hazards (problems associated with windfall, snow and ice loaded tree and limb fall) would continue. Those hazards would conflict with the BLM's designation of the road as an Access Road (maintained to a higher standard, both for public and industrial access).	The project would remove hazard trees (any trees leaning into, or over the roadbed; and deciduous trees with canopies overtopping the roadway) within 100 feet of the road prism in 45 to 50 year-old forest. This project would utilize a commercial timber sale to remove trees adjacent to the South Fork Alsea Access Road (Road #14-6-34.1).
Treat existing and newly created slash and space out tree crowns to reduce the risk of a fire start, provide areas with a lower rate of spread and lower resistance to control and lower fire intensity from which to control any fire that occurs in the surrounding area.	Tree death caused by suppression would continue.	Fuel loading, risk of a fire start and the resistance to control a fire, would all decrease in the project area as a result of the proposed action. Increasing the spacing between the tree crowns would have the beneficial result of decreasing the potential for crown fire occurrence in the treated stand. By piling and burning and/or chipping the slash it would be highly unlikely for any fire to build enough intensity to enter the crowns of the residual stand.

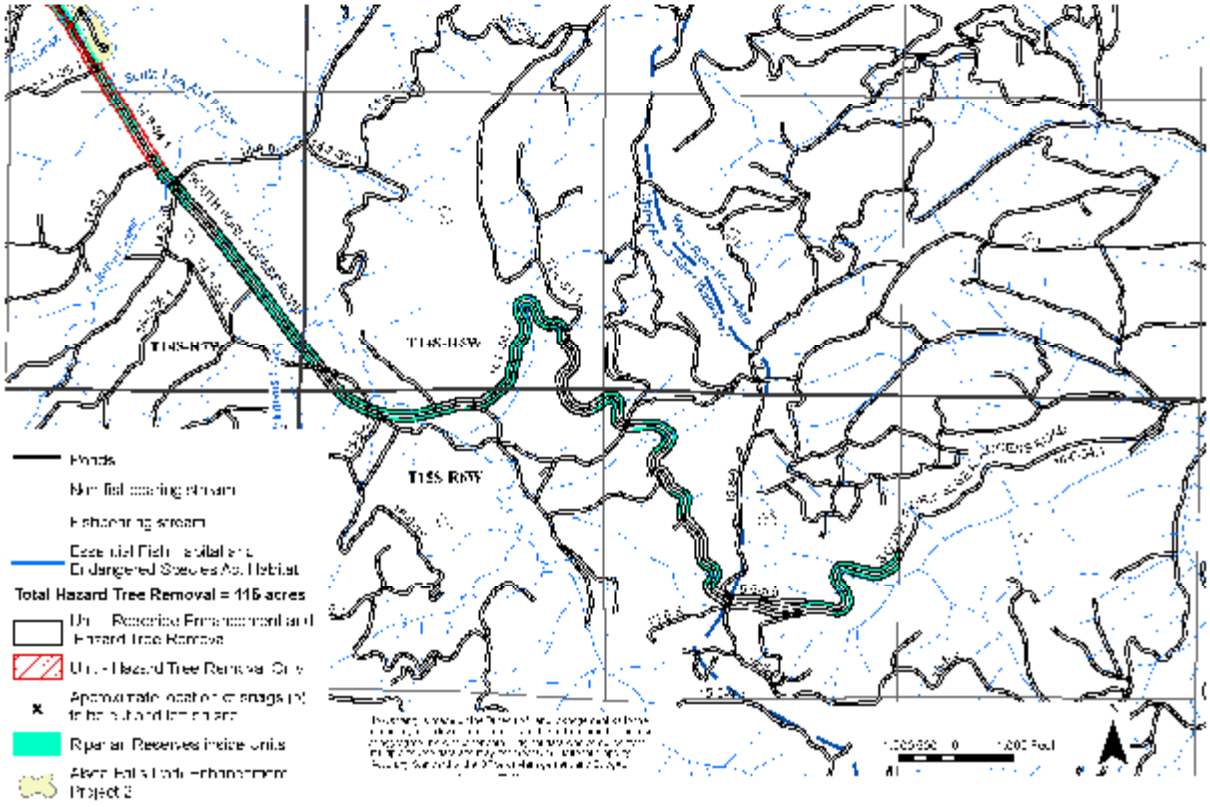
Reduce road maintenance costs by removing imminent and likely hazard trees before they create immediate hazards.	Road maintenance costs of removing hazard trees and reducing slick road surfaces would continue at the current rate.	Road maintenance costs would be substantially reduced by removing imminent and likely future hazard trees and by removing trees that create slick road surfaces. This reduction would provide the means to complete road maintenance that would repair, maintain and improve infrastructure on BLM administered roads.

Table 4: Comparison of Alternatives by Purpose and Need (Project 2 only)

Purpose and Need (EA Section 1.6)	Alternative 1 (No Action)	Alternative 2 (Proposed Action)
Manage natural resources to enhance visitor recreation experiences and satisfy public land users by removing trees that create a hazard within the recreation site and along the trail system.	Hazard trees would remain until they fall naturally or are at a high rating through an inventory of trees in the recreation site and are then felled.	The project would remove hazard trees resulting in a safer environment to the public.
Create a stand that gives a pleasing visual experience of large, full-crowned trees, stand complexity featuring a range of tree sizes and densities, multiple canopy levels that provides visual screening, and visually shows little evidence of management	Trees continue to grow and close in the canopy reducing light to the understory and natural regeneration/recruitment. Trees would continue to be suppressed and grow at a slower rate.	Thinning would increase both understory and overstory tree diameter growth, increase crown length, width, and branch size, promote stand stability and result in a greater level of understory development than would occur without thinning.

Purpose and Need (EA Section 1.6)	Alternative 1 (No Action)	Alternative 2 (Proposed Action)
Designate developed recreation sites as fire suppression areas and fire fuel management areas by managing timber within the recreation site to reduce fuel levels and rate of spread.	Fuel loading, risk of a fire start and the resistance to control a fire, would all increase. Potential for crown fire would continue to increase as tree crowns continue to enclose upon each other	Fuel loading, risk of a fire start and the resistance to control a fire, would all decrease in the project area as a result of the proposed action. Increasing the spacing between the tree crowns would have the beneficial result of decreasing the potential for crown fire occurrence in the treated stand. By chipping the slash and ladder fuels it would be highly unlikely for any fire to build enough intensity to enter the crowns of the residual stand.
Retain variability by removing a proportion of trees per acre and intentionally reserving a range of residual densities. Maintain species diversity by retaining most hardwoods and western hemlock, and all western red cedar. Reduce incidence and impact of root and stem decays by removing susceptible trees adjacent to disease centers.	Stand structure would remain relatively uniform, except for gaps created by disturbance. Development of desirable stand characteristics, such as large diameter, full-crowned trees and multiple canopy layers would not be accelerated. Species diversity would remain the same. The spread of root diseases would continue. The perimeters would expand within the centers of infection, as many western hemlock, and nearly all Douglas-fir would be killed, leaving red alder and western red cedar.	The treatment would increase spatial and structural diversity of the stand. Some trees would experience no competition and grow very full crowns. Some trees would remain at close spacing and retain closed canopy conditions. Infection centers would be likely sites of windthrow after treatment. Windthrow is not expected to reduce tree stocking by more than 20 percent for the first decade after treatment.
Reduce the likelihood for contaminants to enter into the water system that supplies the recreation site by replacing approximately 2,500 linear feet of underground water lines.	The likelihood of contaminants entering the water system would increase as pipes break, creating leaks within the system.	Reduces the likelihood of contaminants entering the water system through the replacement of the 40 year old water system.


EA MAP
T14S R7W
Total Hazard Tree Removal = 116 acres


EA MAP
T14S R6W
T14S R5W
T15S R6W
Roads
Total Hazard Tree Removal = 116 acres
Riparian Reserves Inside Units

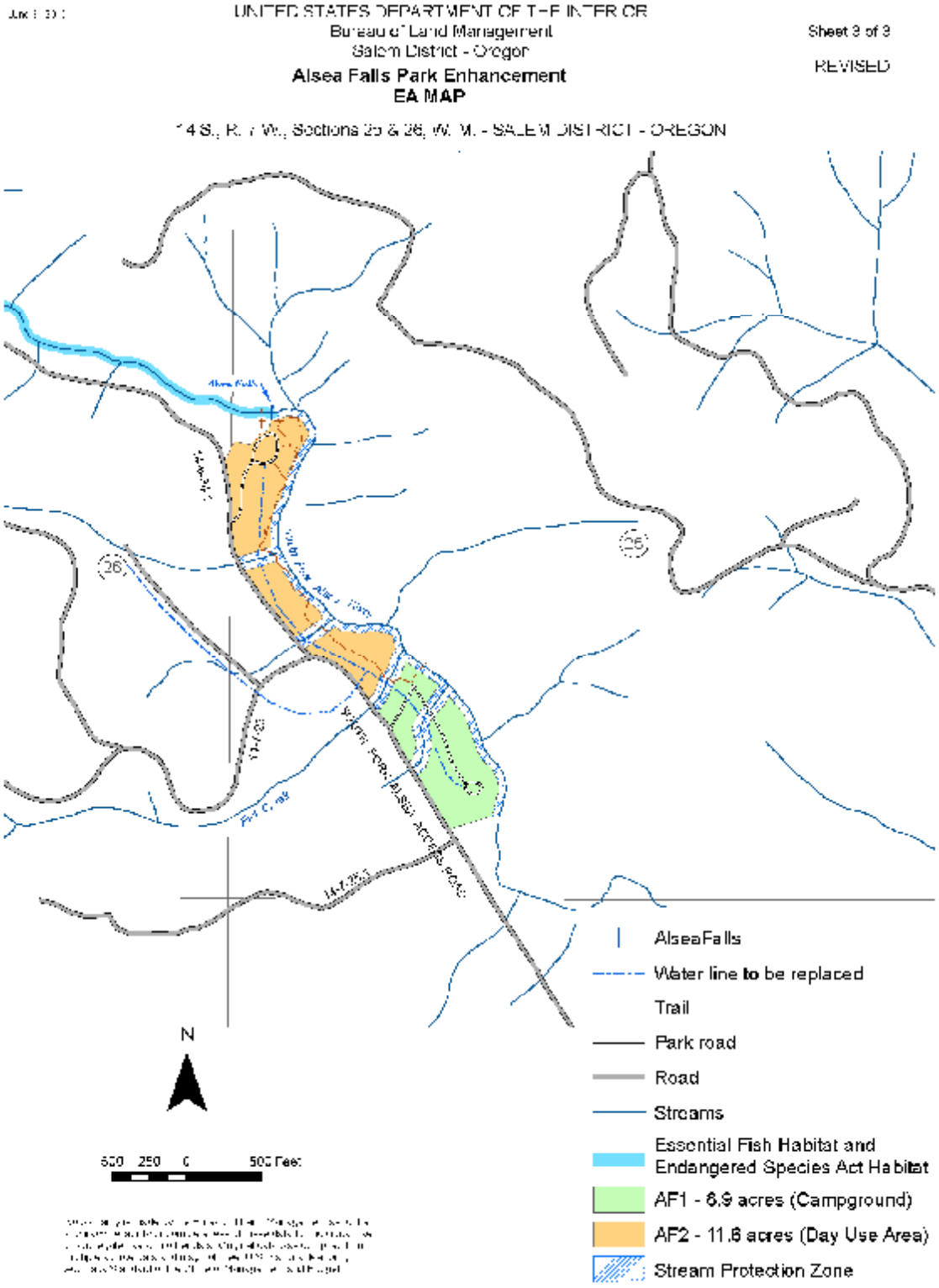

UNITED STATES DEPARTMENT OF THE INTERIOR
Bureau of Land Management
Salem District - Oregon
Alsea Falls Park Enhancement
EA MAP
Sheet 3 of 3
REVISED
14 S., R. 7 W., Sections 25 & 26, W. M. - SALEM DISTRICT - OREGON
Alsea Falls
Water line to be replaced
Trail
Park road
Road
Streams
Essential Fish Habitat and Endangered Species Act Habitat
AF1 - 6.9 acres (Campground)
AF2 - 11.8 acres (Day Use Area)
Stream Protection Zone
N
500 250 0 500 Feet

Table 5: Elements of the Environment Review based on Authorities and Management Direction

Element of the Environment /Authority	Remarks/Effects
Aquatic Conservation Strategy	In compliance with PCFFA IV (Civ. No. 04-1299RSM), this project complies with the Aquatic Conservation Strategy described in the Northwest Forest Plan and RMP. These projects also complies with the PCFFA II (265 F.3d 1028 (9th Cir. 2001)) by analyzing the site scale effects on the Aquatic Conservation Strategy. EA section 5.0 shows how the South Fork Alsea Acccess Road Hazard Tree Removal/Alsea Falls Park Enhancement projects meet the Aquatic Conservation Strategy in the context of the PCFFA cases.
Air Quality (Clean Air Act as amended (42 USC 7401 et seq.)	These projects are in compliance with this direction because air quality impacts would be of short duration (one burn period during implementation of pile burning). Addressed in Text (EA Section 3.1.7).
Cultural Resources (National Historic Preservation Act, as amended (16 USC 470) [40 CFR 1508.27(b)(3)], [40 CFR 1508.27(b)(8)]	These projects are in compliance with this direction and the project would have no effect on this element because Cultural resource sites in the Oregon Coast Range, both historic and prehistoric, occur rarely. The probability of site occurrence is low because the majority of BLM managed Oregon Coast Range land is located on steep upland mountainous terrain that lack concentrated resources humans would use. Post-disturbance inventory would be conducted according to Appendix D of the *Protocol for Managing Cultural Resources on Lands Administered by the Bureau of Land Management in Oregon.* Inventoried areas would be based on percent slope and topographic features
Ecologically critical areas [40 CFR 1508.27(b)(3)]	These projects would have no effect on this element because there are no ecologically critical areas present within the project area.
Energy Policy (Executive Order 13212)	These projects are in compliance with this direction because these projects would not interfere with the Energy Policy (Executive Order 13212).
Environmental Justice (E.O. 12898, "Environmental Justice" February 11, 1994)	These projects are in compliance with this direction because projects would have no effect on low income populations.
Fish Habitat, Essential (Magnuson-Stevens Act Provision: Essential Fish Habitat (EFH): Final Rule (50 CFR Part 600; 67 FR 2376, January 17, 2002)	These projects are in compliance with this direction because NMFSs Biological Opinion (2008) found habitat restoration actions would not result in adverse modification of EFH. Effects to this element are addressed in text (EA Section 3.1.3).
Farm Lands, Prime [40 CFR 1508.27(b)(3)]	The projects would have no effect on this element because no prime farm lands are present on BLM land within the Marys Peak RA.
Floodplains (E.O. 11988, as amended, Floodplain Management, 5/24/77)	These projects are in compliance with this direction because the proposed treatments would not change or affect floodplain functions.

Element of the Environment /Authority	Remarks/Effects
Hazardous or Solid Wastes (Resource Conservation and Recovery Act of 1976 (43 USC 6901 et seq.) Comprehensive Environmental Repose Compensation, and Liability Act of 1980, as amended (43 USC 9615)	These projects would have no effect on this element because no Hazardous or Solid Waste would be stored or disposed of on BLM lands as a result of these projects.
Healthy Forests Restoration Act (Healthy Forests Restoration Act of 2003 (P.L. 108-148)	These projects are in compliance with this direction because treatments would decrease the risk of fire and help restore forests to healthy functioning condition (EA Section 3.1.7).
Migratory Birds (Migratory Bird Act of 1918, as amended (16 USC 703 et seq)	These projects are in compliance with this direction because treatments would restore natural resources that could degrade habitat for migratory birds. Addressed in text (EA Section 3.1.6).
Native American Religious Concerns (American Indian Religious Freedom Act of 1978 (42 USC 1996)	These projects are in compliance with this direction because no Native American religious concerns were identified during the scoping period.
Noxious weed or non-Invasive, Species (Federal Noxious Weed Control Act and Executive Order 13112)	These projects are in compliance with this direction because Project Design Features would prevent establishment of new populations of invasive plant species and because vegetation development would result in decline in both number and vigor of invasive plant populations in the project area. Addressed in text (EA Section 3.1.1).
Park lands [40 CFR 1508.27(b)(3)]	The project would have no effect on this element because there are no parks within or adjacent to the project area.
Public Health and Safety [40 CFR 1508.27(b)(2)]	The project would have no effect on this element because the public would be restricted from the project area during operations and the project would not create hazards lasting beyond project operations.
Threatened or Endangered Species (Endangered Species Act of 1983, as amended (16 USC 1531)	These projects are in compliance with this direction because there would be no adverse effects on Threatened or Endangered Species (EA Section 3.1.3 and 3.1.6).
Water Quality –Drinking, Ground (Safe Drinking Water Act, as amended (43 USC 300f et seq.) Clean Water Act of 1977 (33 USC 1251 et seq.)	These projects are in compliance with this direction because Oregon State water quality standards would be adhered to and the area hydrology would not be changed measurably. Addressed in text (EA Section 3.1.3)
Wetlands (E.O. 11990 Protection of Wetlands 5/24/77) [40 CFR 1508.27(b)(3)]	These projects are in compliance with this direction because wetlands within the project area would be protected by buffers. (EA Section 3.1.3)
Wild and Scenic Rivers (Wild and Scenic Rivers Act, as amended (16 USC 1271) [40 CFR 1508.27(b)(3)]	These projects are in compliance with this direction because there are no Wild and Scenic Rivers within or adjacent to the project areas.
Wilderness (Federal Land Policy and Management Act of 1976 (43 USC 1701 et seq.); Wilderness Act of 1964 (16 USC 1131 et seq.)	These projects are in compliance with this direction because there are no Wilderness Areas or areas being considered for Wilderness Area status in or adjacent to the project areas.

3.0 Affected Environment and Environmental Effects

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

3.1.1 Vegetation

Affected Environment

Hazard Tree Removal/Roadside Enhancement (Project 1) and Park Enhancement (Project 2)

Present Stand Condition and History

The project areas occur within a 55 year-old western hemlock plant association and are dominated by a coniferous forest that is comprised mainly by Douglas-fir and/or red alder and big leaf maple. Although some of the project areas occur within conifer stands which are older than 80 years, the actual age of the treatment areas is approximately 50 years of age. These areas are younger than the adjacent stands because they were harvested when the access road was constructed.

Douglas-fir is the major component of all of the project areas with the exception of the areas located in Township 14 South, Range 7 West, Section 21 where red alders are dominant. For the remainder of the project areas, big leaf maples and red alders are mostly confined to riparian areas and red alders often occur adjacent to the road prism where soil was disturbed during road construction. Common tall shrubs in the project area include: vine maple, California hazlenut and salmonberry within riparian zones. Dominant low growing shrubs and forbs include salal, Oregon grape and sword-fern.

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

Table 6. Current Stand Attributes (trees greater than 7 inches DBHOB)

AF1 (Campground)						
Species	***Acres***	***Total age***	***Trees/ac***	***Basal area/ac[1]***	***DBH (in.)[2]***	***Crown closure[4]***
Douglas-fir			72	223	23.8	
Red Alder			29	29	13.3	
Total	**12**	**57**	**101**	**252**	**21.3**	**54%**
Saplings			33.2	1.3	2.7	
AF2 (Day Use Area)						
Douglas-fir			160	215	15.7	
Western Hemlock			90	85	13.2	
Red Alder			10	5	9.7	
Total	**9**	**56**	**260**	**305**	**14.7**	**74%**
Saplings			28.5	1.8	2.5	

Forest Health
There are no known current threats to forest health beyond the following endemic processes in the proposed project area. Laminated root rot, caused by the fungus *Phellinus weirii*, is a native root pathogen that is a natural part of many forest ecosystems (Thies and Sturrock 1995). *P. weirii* affects less than 5 percent of the area, creating small (0.1 to 0.2 acre) openings in stand AF2 where infected Douglas-fir have died.

Stand AF2 also contains scattered western hemlock trees infected with *Heteobasidium annosum* root disease. To reduce the risk to recreationists from weakened trees, design features to reduce the spread of both root diseases are included in the project. To prevent the spread of annosum root disease, the fungicide Sporax® would be applied to all freshly-cut surfaces of live conifer stumps during the thinning process. Presence of disease may not be obvious; therefore, it is reasonable to treat all live conifer stump surfaces even though some may already be diseased. Sporax® application would occur on approximately 2,600 live tree stumps over the 20.5 acre campground. Because one pound of Sporax® can treat 50 square feet of tree stumps and each stump is about one square foot in size, approximately 50 lbs. would be used. No treatment would be necessary on stumps occurring from snags removed for safety reasons. The USDA Forest Service has provided a *Human Health and Ecological Risk Assessment for Borax (Sporax®) Final Report* and hereby incorporated by reference. The document is available at http://www.fs.fed.us/foresthealth/pesticide/pdfs/022406_borax.pdf

Bureau SS Botanical and Fungal Species
Inventory of the project area for bureau SS vascular plant, lichen, bryophyte and fungal species were accomplished through review of; 1) existing survey records and spatial data, 2) habitat evaluation and evaluation of species-habitat associations and presence of suitable or potential habitat, and 3) field clearances, field reconnaissance and inventories utilizing intuitive controlled surveys, in accordance with survey protocols for the specific groups of species. Many portions of these project areas have been surveyed in the past for bureau SS species.

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

Non-native plants (Noxious Weeds, Invasive Non-native Species):
The following noxious weeds are known from within or adjacent 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 armeniacus*), Scot's broom (*Cytisus scoparius*) and false brome (*Brachypodium sylvaticum*)

Environmental Effects

3.1.1.1 ***Alternative 1 (No Action Alternative)***

Hazard Tree Removal/Roadside Enhancement (Project 1)
Without treatment, stand structural conditions would remain on the current trajectory of increasing density and decreasing individual tree growth rates. Density mortality would continue contributing a flow of 'hazard trees' within the South Fork Alsea Access Road corridor. Similar to Stand AF2 in Project 2, stands of that age and density would typically have 25 percent stand mortality in 20 years, or about 40 to 100 trees per acre, averaging about 10 inches diameter (using the ORGANON growth and yield computer simulation model, Edition 7.0 (Hann, 2003), stand AF2). Natural disturbance agents such as disease,

insects, and wind would create stand structural diversity and contribute to structural development, but resulting damaged or killed trees would be hazards within the road corridor.

Many of the leaning and suppressed trees along the roadway would fall into the roadway and create hazardous situations for motorized and non-motorized vehicles. As hardwoods fall into the roadway it would create an opening above the roadway and an adjacent hardwood would eventually fill in the void, creating additional hazards.

Because of the heavy stocking; the number and diversity of shrubs and forb species in many areas may remain low for several decades. Eventually openings in the canopy would be created (blowdown, dying trees from lack of sunlight, pathogens & insects) which would allow for additional sunlight to reach the shrubs and forbs and increase the projects areas diversity in numbers and size of individual plants.

Park Enhancement (Project 2)

Without treatment, stand structural conditions would remain on the current trajectory of increasing density and decreasing individual tree growth rates. Density mortality would continue contributing a flow of 'hazard trees'. ORGANON modeling projects density mortality of 38 trees per acre of an average diameter of 10 inches in stand AF1 over the next 20 years, and 69 trees per acre of 9.5 inches average diameter in stand AF2. Natural disturbance agents such as disease, insects, and wind would create stand structural diversity and contribute to structural development, but would also contribute to hazard tree recruitment.

Without treatment, stand structure would remain relatively uniform, except for gaps created by disturbance. Development of desirable stand characteristics, such as large diameter, full-crowned trees and multiple canopy layers would not be accelerated. Species diversity would remain the same.

Crown ratio, the proportion of the tree crown height to the total tree height, is directly related to the health and vigor of the tree. As the canopy closes and lower limbs are lost to shading, crown ratios would decrease in stand AF1 from the current average of 35 percent to 25 percent in 30 years, and from 29 percent to 26 percent in AF2. Wind firmness and individual tree stability would also decrease.

There would be no reduction in canopy density and consequently no microclimatic changes in the upland or Riparian Reserves.

There would be no short-term elevated risk of bark beetle infestation resulting from harvest, but risk of significant windthrow that could trigger bark beetle infestation would remain.

The spread of *Phellinus weirii* and *Heterobasidium annosum* would continue. The perimeter of *P. weirii* centers would expand about 1 foot per year (Bloomberg, 1984 cited in Theis and Sturrock, 1995). Disease centers (*P. weirii* & *H. annosum*) would increase and within the centers of infection, nearly all Douglas-fir would be killed, and many western hemlock, leaving red alder and western red cedar. *Heterobasidium annosum* would spread, creating little mortality, but weakening trees and making them more susceptible to windthrow. *Heterobasidium annosum* would also be expected to spread through the implementation of this project by creating additional avenues for infection (cut stumps).

Characteristics for the stands in Project 2 thirty years from present with and without treatment as projected by ORGANON are compared in Table 8.

Hazard Tree Removal/Roadside Enhancement (Project 1) and Park Enhancement (Project 2)

Bureau SS Botanical and Fungal Species
Not affected, since no known sites exist within the project area.

Noxious Weeds:
Without any new human caused disturbances in the proposed project area the established noxious weed populations would remain low. However, false brome is rapidly becoming infested throughout the South Fork Alsea River Watershed and it is anticipated to become established within the project area within the next couple of years. False brome is being targeted for removal in the area by the Marys Peak Resource Area under separate NEPA documentation.

3.1.1.2 ***Alternative 2 (Proposed Action)***

Hazard Tree Removal/Roadside Enhancement (Project 1)
The proposed action would decrease safety hazards by removing trees and additional suppressed and co-dominant coniferous trees. This action would reduce-existing hazardous conditions for motorized and non-motorized vehicles.

Stand development would be little changed from the no-action alternative, because treatment occurs in a narrow roadside strip, and would primarily remove trees that are suppressed, damaged, or dead and have little effect on overall stand trajectory. An estimated maximum of 25 percent of the trees per acre and 25 percent of the stand basal area would be removed. Dominant and co-dominant conifer trees without damage or defect and/or not leaning into the roadway would remain. Treatment would slightly reduce tree competition and remove suppressed trees that are most likely to die from density mortality within the next 20 years, and thus prevent suppressed trees from becoming hazard trees. Treatment would reduce the proportion of hardwood trees and favor the growth of conifer trees, but the effect would be limited to the immediate roadside.

The increased amount of sunlight would allow conifer and hardwood seedlings and saplings, shrubs, forbs, ferns and graminoids to increase in size and density. Many open slash covered areas could become dominated by shrub and/or fern species. The proposed action would increase vegetative diversity within the project area. Many of the reserved hardwoods would eventually lean and grow over the roadway again creating hazards. However, because this is also a density treatment (thinning), the hardwoods would also have room to grow on all sides and not be limited to hanging over the roadway. This would help reduce the amount of hardwoods leaning over the roadway in the future than if the trees were not thinned.

The stems of many of the severed conifers and hardwoods would be removed from the site. A portion of the tops, branches and broken/shattered stems would remain on site to decay. Some of the material would be piled and later burned. Vegetation located within these pile sites would likely be killed or severely reduced due to the burning of the piles.

Park Enhancement (Project 2)

Stand Development
Stand development for 30 years growth after density management under the proposed action and without treatment is compared in Table 8. The treatment includes variable density thinning, creation of small

gaps, and retention of small clumps. This would increase spatial and structural diversity of the stand. Some trees would experience no competition and grow very full crowns. Some trees would remain at close spacing and retain closed canopy conditions.

Accelerated development of desired tree characteristics
After treatment residual trees would have accelerated diameter growth and increased crown depth/width. Limb diameter and crown depth would be maintained because trees would be released from competition that causes growth decrease and loss of shaded lower limbs. The long-term results of density management would be larger average diameters and deeper crowns (higher crown ratios) at any given age. The predicted average increase in QMD for overstory trees in the thirty years following density management thinning is 5.0 inches. Without thinning, the average increase in QMD is predicted to be 4.1 inches. Density management would result in an additional 0.9 inch of diameter growth in 30 years, a 22 percent increase from no treatment.

Maintenance of stand health and stability
Trees with less competition maintain deeper live crowns, lowering their center of gravity and decreasing their height/diameter ratios, reducing susceptibility to wind damage. Deep live crowns are also a structural attribute of late seral forest. With treatment, the current stand average height to diameter ratios (calculated from the quadratic mean diameter and the height of the 40 largest trees per acre) of 73, would decline to an average of 70 after 30 years of growth indicating an improvement of tree stability over time.

Long-term increase in quality CWD recruitment
The risk of a bark beetle infestation from the increased fresh down wood is unlikely to be increased with the proposed action, because treatment would dispose of much of the down wood created by project implementation.

The potential for windthrow from winter storms would be higher for the first decade following density management. The risk is reduced in the design of the variable density thinning; residual densities are higher than generally prescribed, for aesthetic reasons. Higher density decreases the risk of individual tree loss to windthrow. The area is somewhat sheltered by higher ridges to the south and west.

Phellinus weiri infection centers would be likely sites of windthrow after treatment, because of the opening edges created by removal of infected and buffer trees. Wind throw is not expected to reduce tree stocking by more than 20 percent for the first decade after treatment over the treated area (Busby, Adler, Warren and Swanson, 2006). A two-year study of wind damage following variable density thinning (Roberts, et al., 2007), showed a loss of 1.3 percent of stems concentrated in topographically vulnerable conditions. The study showed overall level of wind damage resulting from variable density thinning is not statistically greater than unthinned stands, nor uniform thinning.

Table 7. Project 2 Stand Characteristics with Treatment vs. No Treatment 30 years in the future (year 2038)[1]

Unit	Tmt.[6]	Age[1] (yrs)	TPA[2]	% DF	BA[3] (Sq.Ft.)	QMD (in.)[4]	RDI[5]	Density Mortality		
								TPA	BA	QMD
AF1	No Tmt.	88	81	79%	306	26.2	.74	49	30	10.6
AF1	195 BA	88	53	90%	265	30.2	.60	6	7.8	15.4
AF2	No Tmt.	87	198	56%	353	18.1	.99	85	45	9.9
AF2	150 BA	87	65	86%	212	24.5	.52	3	5.2	17.8
Avg	**No Tmt.**	**87.5**	**139**	**67 %**	**329**	**22.1**	**.86**	**67**	**37**	**10.3**
Avg	**Tmt**	**87.5**	**59**	**88 %**	**238**	**27.3**	**.56**	**4.5**	**6.5**	**16.2**

[1] Modeled from stand age in 2008 to 2038.
[2] Trees per acre greater than 7 inches DBHOB.
[3] Basal area in square feet: cross-sectional area occupied by tree boles on each acre, a measure of density
[4] QMD=quadratic mean diameter, the DBHOB of tree of mean basal area.
[5] Relative Density (RD) is a ratio of trees in a given stand compared with the number of trees a site can support.
[6] Tmt = treatment for units

Hazard Tree Removal/Roadside Enhancement (Project 1) and Park Enhancement (Project 2)

Bureau SS Botanical and Fungal Species

These projects would not directly affect any SS vascular plant, lichen, bryophyte or fungi species since there are no known sites within the project area or adjacent to the project. However, thinning dense stands would provide habitat for SS botanical and fungal species known from forests with larger diameter trees at an earlier age since thinning dense stands can allow for increased secondary conifer growth and allow for the development of the understory and shrub species.

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

Non-native plants and noxious listed weeds:

Exposed mineral soil often creates environments favorable for the establishment of non-native plant species. Yarding corridors and landing sites pose the greatest risk of exposing mineral soil with the implementation of this project.

Any adverse effects from the establishment of Canadian and bull thistles, St. John's wort, tansy ragwort, Himalayan blackberry, Scot's broom and false brome within or near the project area are not anticipated and the risk rating for the long-term establishment of these species and consequences of adverse effects on this project area is low because; 1) the implementation of the Marys Peak integrated non-native plant management plan allows for early detection of non-native plant species which allows for rapid control, 2)

generally these species often persist for several years after becoming established but soon decline as native vegetation increases within the project areas, 3) seeding the exposed soil areas would reduce the opportunity of spread, and 4) Marys Peak is aggressively treating any known false brome sites in the area and will monitor this project for rapid response to any new infestations.

3.1.2 **Recreation/Visual Resources**

Affected Environment

Hazard Tree Removal/Roadside Enhancement (Project 1) and Park Enhancement (Project 2)

Recreation

The project areas are within a recreational forest setting and accessed by the paved South Fork Alsea Access Road. Evidence of man-made modifications (roads, trails, timber harvest, utilities, buildings, residential development) is common on both private and public lands within or in the vicinity of the project areas. Timber management operations are likely to continue on both private and public forest lands in the vicinity. Activities that occur within and adjacent to the project areas include camping, picnicking, hiking, swimming, biking, horse riding, hunting, off-highway vehicle (OHV) use, target shooting, driving for pleasure, and special forest product harvest. Two thirds of recreation use in the project area s occur during the months of May through October. Alsea Falls Recreation Site OHV use is limited to designated roads and trails and the remaining project areas are open to OHV use. The project areas are not currently used by OHVs.

Project 1 is along the South Fork Alsea River National Back Country Byway (South Fork Alsea Access Road). The paved South Fork Alsea River National Back Country Byway (Byway) is an alternate, off the beaten path route for travelers to the Oregon Coast by connecting the Willamette Valley to Highway 34. Vehicle use of the Byway increases during the months of May through October. Traffic counters at both ends of the Byway recorded an average of nearly 48,000 vehicles for the 2008 fiscal year.

Project 2 (Alsea Falls Recreation Site) is located to the east of Alsea Falls on the South Fork of the Alsea River. Alsea Falls Recreation Site is adjacent to and visible from Project 1 area while driving the Byway. Alsea Falls recreation site open season in 2010 is from currently Memorial Day through Labor Day (unless ready to open earlier), however walk-in use is allowed when the park is closed. This recreation site has an extensive trail system, 16 campsites, 22 picnic sites, 4 restrooms, a water treatment building and an administrative shop. The trails to the north and south of the Byway include gravel forest roads and those along the river are primary links connecting the campground and picnic areas. Recreation use concentrations range from low to high depending on the weather and season. Maximum use occurs on summer weekends and holidays. Approximately 27,000 visitor days occur per year within the recreation site. Isolation from the sights and sounds of humans and the opportunity to interact with the natural environment exist within Alsea Falls Recreation Area.. However, visitors may hear and see vehicles driving the Byway.

Visual Resource Management

Visual resource values and opportunities to maintain scenic quality are greatest on BLM-administered lands seen from special recreation management areas, and recreation sites and trails. 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 the project areas as a contiguous viewshed. Timber management operations near or adjacent to the project areas are observable from private and public lands including Alsea Falls Recreation Site and the Byway. The view from major roads and highways of the surrounding terrain is one of timber management, where various age classes of trees are visible.

The proposed projects are within VRM Class 2, which states "Manage visual resource management class 2 lands for low levels of change to the characteristic landscape. Management activities may be seen but should not attract attention to the casual observer. Changes should repeat the basic elements of form, line, color, texture, and scale found in predominant natural features of the characteristic landscape." (RMP p. 37).

All of the project areas are in the foreground and observable from the Byway. Project 2 is also observable while visiting Alsea Falls Recreation Site. The project is in the distance when looking from major public travel routes or other key observation points and may not be observable since the rolling mountains and remaining trees and vegetation block the view. Project 1 may be observable from nearby residences. For the most part BLM lands are unidentifiable from other lands when looking at the landscape from any vantage point.

Environmental Effects

3.1.2.1 *Alternative 1 (No Action Alternative)*

With the exception of unexpected changes (i.e. wildfire or disease), the project areas would continue to provide a recreational forest setting for designated recreation use on the byway and at Alsea Falls recreation site, as well as dispersed recreational activities. A one to three year increase in log truck traffic, noise and other inconveniences related to the thinning operations, slash treatments, and waterline replacement activities would not occur. However, the same timber harvest actions from other landowners' timber management operations in the vicinity would still occur. No modifications to the landscape character of the project areas would be expected to occur. Modifications to the landscape character in the vicinity of the proposed project areas would still be expected, as a result of timber management operations on other lands.

3.1.2.2 *Alternative 2 (Proposed Action)*

Recreation

Hazard Tree Removal/Roadside Enhancement (Project 1)

Removing a portion of trees within 100 feet of the Byway would reduce the hazard and potentially increase the sight distance in areas where trees are dense. The haul route incorporates the Byway. This additional traffic on the road is a minor concern. Although not a two-lane road, the Byway is wide enough to accommodate two larger vehicles passing. During hauling operations, the Byway has the potential to have a high volume of truck traffic and recreational travelers with varying sizes and shapes of vehicles especially during the summer months.

Park Enhancement (Project 2)

A recreational forest setting would remain. Vegetation disturbed by operations would re-grow within five years concealing any evidence of thinning and waterline replacement operations. Recreational use of the project areas would be restricted during thinning, hauling, slash treatment, and waterline replacement operations, generally when the recreation site is closed and recreational use is low along the byway. The projects would occur sometime after the 2010 camping season which ends September 6. The long-term seasonal operation of facilities at Alsea Falls Recreation Area of Memorial Day weekend through Labor Day would not change and year round foot and bicycle access would continue on trails. Other BLM lands nearby will remain available for recreational opportunities. Recreational users in the vicinity will hear the noises of the timber sale operations and may experience traffic delays of up to 15 minutes.

Removing vegetation may allow more noise from the Byway to filter into the Alsea Falls Recreation Site. Noise has always been a factor for this recreation site due to the close proximity to the Byway. Thinning operations would open up the canopy allowing light to hit the forest floor vegetation thus increasing growth and screening between campsites, picnic sites and the Byway. Vegetative growth would contribute to screening the noise and sight of the Byway and other visitors, contributing to a peaceful park setting.

After thinning operations, recreation users would continue to use Alsea Falls recreation site and South Fork Alsea River National Back Country Byway as in the past. This project may impact some visitors or users of the project areas. Thinning trees for future desired condition of remaining trees and replacing the waterlines would improve overall safety along the byway and at Alsea Falls recreation site. Future recreation opportunities would remain the same.

Visual Resource Management

Timber harvest and waterline replacement is allowable in VRM 2 areas, but activities should not attract attention to the casual observer. The removal of some trees within Projects 1 and 2 would have a minimal impact to the quality of the whole viewshed. Changes to the landscape character are expected to be seen while adjacent to the project areas. Visual disturbance of the project area would be associated with modifications to vegetation and other ground disturbing activities from thinning and waterline replacement activities. The proposed action would maintain some canopy cover and repair any roads along the byway and in the recreation site. The areas are expected to return to a more natural appearance within five years as disturbed vegetation returns and the existing canopy grows.

Removing trees would create a high amount of slash. Project design features mitigate the majority of visual impacts. Visitors would notice overall management of the trees and disturbance to vegetation, increased sight distance, and experience safer driving conditions. Debris chipped and left on site would be noticeable until the chips decay. Burned piles along the byway would be noticeable until vegetation grows over the charred sites. There may be a few days where there is a decline in visual quality within the larger landscape viewshed as a result of the smoke created while burning of debris/slash piles occur. Any burning would be done in compliance with state smoke management regulations.

There would be a three to five year decline in visual quality as a result of dying vegetation, chipped material and ground disturbance, but visual qualities of larger trees and clearings would be achieved. Design features would minimize impacts and increase compliance with VRM objectives.

Waterline replacement would have a minimal impact to the quality of the whole viewshed. Most of the disturbance would be from modifications to vegetation associated with the crushing of vegetation and roadbed cuts for access by the equipment used for trenching. The area would to return to a more natural

appearance quickly as disturbed vegetation returns and grasses grow. Roads would be repaired after completion of project.

Project design features such as grass seeding and waiting until after the camping season would reduce the focus of management actions. Design features would minimize impacts and increase compliance with VRM objectives.

3.1.3 **Fisheries**

Affected Environment

Hazard Tree Removal/Roadside Enhancement (Project 1) and Park Enhancement (Project 2)

Alsea Falls on the South Fork Alsea River, located in Section 25, is a combination of a steep slide and 12 foot falls. This creates a barrier to all anadromous fish species. This falls site is a barrier to all anadromous fish (BLM 1995). This falls site 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 South Fork Alsea River above the falls (House 1986), however the Oregon Department of Fish and Wildlife no longer stocks any anadromous fish above Alsea Falls (ODFW 1997). Below Alsea Falls anadromous and resident species are known to reside (BLM 1995). Upstream of Alsea 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.

Fish distribution surveys were conducted in the spring of 2008 covering Park Enhancement (Project 2) areas in Section 25 which drain to the South Fork Alsea (USDI BLM 2008). The lower 200 feet of a small tributary within the Alsea Falls Campground, immediately east of Fall Creek in section 25, was documented as fish bearing. The following additional streams crossing the South Fork Access Road have previously been documented as fish bearing: Fall Creek, Coleman Creek, and Williams Creek.

The South Fork Alsea River thru the project area was surveyed using ODFW protocols in 1997 (ODFW 1997). Active channel width to depth ratio and key wood levels are below the undesirable threshold. In general, pool area and shade are meeting benchmark conditions in the project area stream channels.

Special Status Fish Species

The Oregon Coast coho salmon Evolutionarily Significant Unit (*Oncorhynchus kisutch*) is listed as threatened under the Endangered Species Act (ESA), as amended. Oregon Coast coho salmon are documented in the project area (StreamNet GIS Data 2005) and consultation with NMFS on actions which "may affect" listed species is required under Section 7 of the ESA.

Protection of Essential Fish Habitat (EFH), as described by the Magnuson/Stevens Fisheries Conservation and Management Act, and consultation with NMFS is required for all projects which may adversely affect EFH of Chinook or coho salmon in the action area. The South Fork Alsea River is considered EFH to Alsea Falls.

Environmental Effects

3.1.3.1 *Alternative 1 (No Action Alternative)*

Hazard Tree Removal/Roadside Enhancement (Project 1)

Trees overhanging the South Fork Alsea Access Road would continue to fall across the affected road network. Potentially the no-action alternative could result in an increase in repetitive annual maintenance of the South Fork Alsea Access Road. These maintenance activities may include effects to listed fish species. These activities would be covered under the Road Maintenance category of the programmatic Biologic Opinion resulting from the *Biological Assessment for Programmatic Forest Service and Bureau of Land Management Activities in Northwest Oregon* (May 2, 2008).

Disturbance in forest canopy would be similar to baseline conditions, thus no changes to peak/base flows would be anticipated. The minor site effects to stream shading noted in the proposed action would not occur and no changes to stream temperature would be anticipated. No site disturbances from yarding and falling would occur, thus no changes in sediment transport or erosion would be anticipated.

Leaving the road sides untreated would have no short-term effects on woody debris recruitment to stream channels. Road lengths adjacent to streams (less than 240 feet), would continue to provide coarse woody debris under existing rate. Over the long term, acceleration in the recruitment of alder would be expected as these stands reach maturity, assuming stand aging occurs over the next 20 to 40 years, and tree mortality increases. Large woody debris recruitment to stream channels would not be affected with the implementation of the no-action alternative.

Park Enhancement (Project 2)

Disturbance in forest canopy would be similar to baseline conditions, thus no changes to peak/base flows would be anticipated. The effects to stream shading noted in the proposed action would not occur and no changes to stream temperature would be anticipated under the no-action alternative. No site disturbances from yarding, falling, and water line replacement would occur, thus no changes in sediment transport or erosion would be anticipated under the no-action alternative.

Over the short-term LWD recruitment to stream channels would not be affected with the implementation of the no-action alternative; however, over the long term the beneficial enhancement of diameter and numbers of larger trees would not be realized with the no-action alternative.

3.1.3.2 *Alternative 2 (Proposed Action)*

Hazard Tree Removal/Roadside Enhancement (Project 1)

Falling/Yarding

Reductions in canopy closure and vegetative cover can result in changes in peak or base flows which in turn impair the availability or quality of aquatic habitat. The proposed action would affect the forest canopy over topping the road system and select trees which are considered highly probable to fall across the road in the event of blow down. Due to the nature of the project (removing selected trees along the road segments), combined with onsite retention of wood within SPZs would result in only minor alterations to the canopy in any of the affected drainages. Based on hydrology analysis, this action would be highly unlikely to measurably alter stream flows (Wegner 2008). As changes in peak flows are not

anticipated, the quantity and quality of aquatic habitat would not be expected to change as a result of the proposed action.

Those stream crossings where trees are removed within 55 feet of the stream channels may reduce the amount of shade over the stream. Removing trees which provide shade to the stream channel can negatively affect water temperatures which could impair aquatic habitat quality. The proposed action would remove selected timber along the road which may include up to 39 stream crossings. Some crossings may have young alders growing from the road fill over the top of the stream crossing. The proposed action would remove some alder from these fills that are within 55 feet of a perennial channel. Other stream crossings could have minimal or no actions. The effect is limited to small openings created by the proposed treatment on either side of the crossing. Shade conditions of the affected streams outside of the road prism and fill would not be affected. Based on the Hydrology - Water Quality analysis the proposed action is not anticipated to impact stream temperatures (Wegner 2008). As stream temperature are not anticipated to be affected (due to the disperse nature of openings and small area affected), the quality of aquatic habitat would be unaffected.

All treatments are closely associated with the existing paved road segments. Falling and yarding would be accomplished with harvester/forwarder from the road prism. Any additional compaction or soil displacement would be minimal as treatments are principally limited adjacent to the road, (only hazard trees would be felled west of the Road 14-6-9, and no treatment would occur more than 100 feet from the edge of the South Fork Alsea Access Road east of Road 14-6-9. Based on the Hydrology - Water Quality analysis the turbidity indicators are not anticipated to be impacted from the proposed action (Wegner 2008). With SPZs of at least 55 feet and seasonally restricting ground based activities off of paved roads, the project is unlikely to contribute to increased rates of sediment transport to stream channels. Since water quality characteristics, such as sediment and turbidity are not anticipated to be impacted, the quality of aquatic habitat is not anticipated to be impacted.

Loss of CWD and large woody debris (LWD) due to harvest can affect the stability and quality of aquatic habitat. The proposed falling/yarding is predominately for alder and a minor component of small conifer. Overall there are 39 stream crossings in the project area. Retaining on site any felled conifers that are 24 inch DBHOB or greater within 240 feet of fish bearing streams would protect current LWD function at the site level. Retaining on site any down trees within 55 feet of streams would protect current and future CWD function at the site level. Any portion of a tree that falls into a stream channel would be bucked at least 55 feet from the stream and left on site, further protecting CWD.

The surrounding alder and conifers would be expected to close the openings created over the road prism associated with stream crossings over time and proposed treatments would be expected to provide some growth benefits where stands are over stocked or the canopy is crowded. Remaining trees should increase growth rates following treatments, thus the project would be expected to benefit CWD/LWD over the long term.

Timber Hauling
The proposed year round hauling on the paved South Fork Alsea Access Road (Road # 14-6-34.1) is not expected to result in measurable quantities of sedimentation reaching streams channels. Therefore, no effects to aquatic habitat conditions would be anticipated.

Fuels Reduction/Pile Burning
With incorporation of applicable design features, 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 (Wegner 2008), but not likely to influence fish habitat. The SPZ is expected provide sufficient distance from the stream to capture any surface erosion from pile burning treatments.

Mechanical removal of accumulated logging debris for chipping is not expected to result in short-term or long-term effects to fish. Collection of material at the site may result in a minor amount of soil disturbance. The SPZ is expected provide sufficient distance from the stream to capture any surface erosion from these activities.

Park Enhancement (Project 2)

Yarding/Falling

Reductions in canopy closure, and vegetative cover, can result in changes to peak or base flows which in turn impair the availability or quality of aquatic habitat. The proposed project would affect less than 0.03 percent 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 (Wegner, 2008). No discernable effects to fish habitat within the treatment area are anticipated from undetectable changes in peak and base flows, and would even less likely to affect fish habitat downstream.

Removing trees which provide shade to the stream channel can negatively affect water temperatures. According to the stream shading sufficiency analysis done for the proposed treatment, the proposed SPZ was sufficient to protect critical shade in the primary shade zone, based on topography and average tree height (Snook 2008). Within the treatment units the SPZ widths are designated as a minimum of 55 feet wide. The proposed vegetation treatment in the secondary shade zone (approximately 240 feet 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 1997). Based on the Hydrology – Water Quality analysis, stream temperatures would not be impacted from the proposed action (Wegner 2008). Based on field review, most of the streams in the project area are perennial. Retention of the canopy cover in the SPZs would be expected to maintain the existing shade and the proposed action is unlikely to increase stream temperatures at the site. Based on the shade sufficiency analysis, the hydrology report water quality analysis, and the project design features, the proposed actions are unlikely to affect aquatic habitat, and fish, both at the treatment site and downstream.

Loss of CWD and LWD due to harvest can affect the stability and quality of aquatic habitat. Based on the silvicultural prescription, the proposed action would retain trees with larger diameters (Snook 2008). Based on Organon growth modeling, mechanical treatment of the stand would increase the growth rate for the residual trees approximately 20 percent over 30 years compared to the no treatment option. In the short-term the smaller woody debris would continue to fall from within the untreated SPZs, and larger wood would begin to be recruited from farther up the slopes as the treated stands reach heights of 200 feet. Thus, wood with a larger range of sizes would potentially be recruited into streams over the long-term in treated stands.

As short-term recruitment of the existing CWD is expected to be maintained, the proposed actions are not expected to cause short-term effects to fish habitat at the site or downstream. In the long-term beneficial growth in the size of trees in riparian reserves could beneficially affect LWD recruitment to the stream channel, thus potentially improving the quality/complexity of aquatic habitat adjacent to the treatment areas in the future.

Skidding can compact soil and displace soil thus allowing sediment to be transported down slope and potentially to the stream channel. Based on the Soils and Hydrology analysis, the proposed project is unlikely to impact turbidity, sediment, dissolved oxygen, or nutrient levels (Wegner 2008). Stream protection zones, residual slash, and seasonal restrictions should keep sediment movement to a minimum and away from streams. 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.

Hauling
Hauling can increase the risk of sediment reaching stream channels and negatively affect aquatic habitat. The majority of the haul route located in the sale area is paved including: the picnic loop road, the campground access road, and the South Fork Alsea Access Road. The proposed year round hauling on paved roads is not expected to result in detectable quantities of sedimentation reaching fish bearing streams.

Fuels Reduction/Pile Burning
With incorporation of applicable design features, 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 (Wegner 2008), but are not likely to influence fish habitat. The SPZs are expected provide sufficient distance from the streams to capture any surface erosion from pile burning treatments.

Mechanical removal of accumulated logging debris for chipping is not expected to result in short-term or long-term effects to fish. Collection of material at the site may result in a minor amount of soil disturbance. The SPZs are expected to provide sufficient distance from the streams to capture any surface erosion from these activities.

Water System Replacement
The water lines proposed for replacement would generally follow existing roads and paths to existing water facilities. Work would be located well away from streams. No more than short-term soil disturbance (covering a very a small footprint), is anticipated with the proposed action. No impacts to stream channels or water quality characteristics are anticipated from the waterline replacement in the park area (Wegner 2008). As no hydrologic impacts are anticipated, no impacts to aquatic and fisheries resources would be anticipated.

3.1.4 **Soils**

Affected Environment

Hazard Tree Removal/Roadside Enhancement (Project 1) and Park Enhancement (Project 2)

The affected environment consists of existing road surfaces, ditches, cut/fill slopes and up to 100 feet on each side of the roadway. The project area also includes the Alsea Falls Recreation Site. Soils in road prisms have been structurally altered: organic matter and surface duff layer removed, surface compacted and a layer of gravel or blacktop placed on top. Soils in the project areas that are located away from the road prisms are all silt loams that fall into two basic types: Elsie silt loam with slopes between 0 and 15 percent and Kirkendall-Nekoma-Quosatana silt loam with slopes between 0 and 3 percent.

Environmental Effects

3.1.4.1 ***Alternative 1 (No Action Alternative)***

Hazard Tree Removal/Roadside Enhancement (Project 1) and Park Enhancement (Project 2)

Under this alternative the existing soil conditions at the project areas would continue in their current trends.

3.1.4.2 ***Alternative 2 (Proposed Action)***

Hazard Tree Removal/Roadside Enhancement (Project 1) and Park Enhancement (Project 2)

The effects to surface soil properties from the harvest of timber to existing roadways would be so negligible that they cannot be measured because the majority of the action would be confined to previously disturbed surfaces (i.e., roads). These surfaces are highly resistant to disturbance and have been engineered to withstand traffic. Approximately 70 percent of the activity in this proposal would be carried out from the existing roadways in the project areas. The effects to soils on those areas away from the road surfaces would be limited to tracked machinery (harvester/forwarder) and this equipment would operate on dry soils with some slash component which would result in no measurable increase in soil compaction. The equipment would make as few passes as necessary to complete the activity and would be allowed to operate only in the low moisture portion of the year (generally between June 15 and October 31).

Direct and Indirect Effects

Tree felling, skidding, and hauling:

The felling 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 breakdown and add to the organic matter content of the soil and 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 motorized 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.

Following completion of this proposed action, the majority of understory vegetation and root systems would remain, along with surface soil litter and slash from harvested trees. Expected amounts of surface soil displacement, surface erosion, and dry ravel resulting from harvest operations would be minimal (less than 10% of the area) in the ground-based yarding area, but overall the aerial extent and degree would remain well below the established district guidelines (10 percent or less).

Additional soil compaction can be expected to result in the harvest areas associated with these activities. A study on the effects of compaction on soil bulk densities by Page-Dumroese (1993) found moderate levels of timber removal activities from using forwarder-type equipment (which is proposed in this action) resulted in an 18 percent increase in bulk density of the yarding corridors. All of the proposed timber removal activities are planned and laid out to remain below the cumulative level of 10 percent aerial extent of soil disturbance from the RMP (Timber harvest BMP's , Appendix C-2).

Approximately 7 landings in already compacted areas along roads would be needed. These areas total approximately 1.2 acres. Approximately 1.0 acres in skid trails would also be utilized, this would result in a cumulative detrimental disturbance level of 1.6 percent in the sale area units. The aerial extent and degree of disturbance would remain within RMP guidelines of less than10 percent disturbance, especially since the majority of the areas that would be used for landings are already compacted areas along existing roads (Timber harvest BMP's , Appendix C-2).

For all of the landings, a portion of the existing haul road or the harvest road is used for equipment to operate on. Some additional ground adjacent to the road surface is used to turn equipment around on and to sort and deck logs until transport. Areas where equipment turns or backs around multiple times would experience heavy compaction and disturbance to the top soil layer. These areas would not readily support new vegetation or tree growth in the first 10 years after the work is completed.

The estimated reduction in growth rate for trees on moderately impacted areas is 15-20 percent during the first 10-20 years of growth. As trees age and become established, the negative effect on growth from soil compaction and displacement becomes less pronounced and growth rates may approach that of trees on similar, undisturbed sites. The proposed amount of harvester/forwarder yarding corridors in the sale units is well below the allowable limit in the RMP of 10 percent (Timber harvest BMP's , Appendix C-2), and soil disturbance levels are expected to remain at an insignificant level.

In regard to sediment, most research to date supports the conclusion that the effectiveness of SPZs in forest settings for trapping sediment before it can enter a water way reaches 100 percent at around 150 feet, particularly for diffuse sources such as a sale unit. The research suggests that buffer widths of this magnitude may be more than necessary for the protection of water quality on slopes less than 30 percent (CH2MHILL et al., 1999). All slopes in the project areas are less than 15 percent with the majority of the slopes between 3 and 7 percent. No felling of trees would be allowed within 55 feet of any stream channel for these projects.

Timber hauling that occurs 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 the paved South Fork Alsea Access Road. Project design features call for no hauling on unpaved roads from November 1 to April 30 as this is the normal wet period when the potential for fine sediment delivery to streams is highest.

Based on the USFS - Human Health and Ecological Risk Assessment for Sporax, adverse effects of environmental exposure to the soil resource does not appear to be a risk especially given the atypical application method for Sporax. Widespread exposures to soil are not likely.

Site Productivity

For harvester / forwarder systems, the suggested design features include: soils are fairly dry (less than 25 percent soil moisture), equipment operates on an adequate layer of slash (80 percent soil coverage), and full suspension of logs. Soil impacts in skid trails are expected to result in light to moderate compaction due to slash covering the trails. The trees in the project area have ample crowns, so there would be adequate slash on the ground to protect soils during skiding activities. The harvester/forwarder system is expected to result in light to moderate compaction (10 to 15 percent) with no expected measurable reduction in overall yield for the project area because of the design features.

The estimates in reductions of overall yield are based on studies and observations done in Western OR and WA and are by no means conclusive. Observation and study results vary widely. Studies recently

being done by Weyerhaeuser Co. indicate that negative effects from compacted soil on growth of young trees become negligible within 8-12 yrs of planting. Effects from top soil loss or displacement may have more long term significance than the associated compaction.

The initial severity of compaction and the amount of soil displacement can be reduced when slash and small logs are left in the skid trails and the total number of passes is low (<10). Operating only when soils are dry and soil strength is high will help to reduce the amount of crushing of individual soil aggregates and resulting depth of compaction. Multiple passes on moist or wet soil usually results in heavy compaction.

In order to avoid damage to existing tree roots, we would not plan on ripping skid roads to mitigate compaction. Mitigation would only be in the form of limiting soil disturbance and compaction by skiding on top of slash as much as possible and doing ground based skiding during periods of low soil moisture (less than 25 percent) with a minimum of skid trails (less than 10 percent of the unit area) (Timber harvest BMP's , 2008 FEIS).

Pile Burning:
On the sites where piles are burned, surface organic material would be removed, increasing localized potential for soil detachment. However, sediment delivery to streams is highly unlikely, since burn-pile areas are outside the SPZs in the project area, widely dispersed, and typically smaller than 10 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 moderated and only occur in scattered localized sites.

Pile burning along roads 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. Therefore, pile burning is unlikely to result in surface erosion with delivery of sediment to local streams.

3.1.5 **Water**

Affected Environment

Hazard Tree Removal/Roadside Enhancement (Project 1) and Park Enhancement (Project 2)

The project areas are located in the Northern Oregon Coast Range at elevations ranging from 800 to 1,200 feet. The project areas lie 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. This zone varies with temperature during winter storms but, in the Northern Oregon Coast Range it is assumed to lie between 2,000 to 3,000 feet in elevation. The general project area receives approximately 50 to 60 inches of rain annually.

The project areas are located in 2 fifth field watersheds (Upper Alsea River and Marys River). Over 93 percent of all proposed areas ultimately drain to the Alsea River. There are no key watersheds in the project areas. The primary tributaries impacted by the proposal are the South Fork Alsea River and Muddy Creek.

Project area stream flow
Project streams are similar to other Western Oregon streams where highest discharge takes place during winter storm events. Summer base-flow normally begins in perennial channels sometime in July and continues through October. Many small headwater channels (intermittent or ephemeral) dry up completely during this period.

Peak Flow
Peak flow refers to the instantaneous maximum discharge associated with individual storm or snowmelt events (U.S.E.P.A., 1991). The two largest peak flow events in the last century took place in 1964 and in 1996. Both were estimated at or above a 100 year flood return interval and both were in response to substantial snow pack melt-off. Smaller peak flows are associated with snow pack melting during the spring.

Jones and Grant (1996), among others, hypothesize that forest harvest leads to increases in total storm runoff while road construction and wood removal from channels results in earlier, higher peak flows. Stream channel patterns and dimensions (i.e. width, depth and gradient) adjust to accommodate storm flows ranging from 1 to 5 year events and therefore, change in the size or timing of peak flows can affect channel scour and fish habitat. The cumulative effect of increases in peak flow can be large, causing flooding, with stream channel and bank damage leading to increased fine sediment transport and higher turbidity. Alterations in peak flow timing and quantity are particularly of concern in watersheds with potential for snow accumulation and quick melt-off during ROS events such as occurred in the 1996 flood.

Potential for peak flow augmentation due to forest harvest: Current Condition
Because the type of actions proposed for this project (felling of individual trees in the park and within 100 feet of the roadway, and minimal access requirements), do not allow for a good calculation of potential impacts to peak flows, a rigorous analysis was not completed.

In Joanne Greenberg's research for Boise Cascade Corporation (Hydrologic Process Identification for Western Oregon, page 7) she assumed an elevation of 2,300 as the break between precipitation dominant and ROS. Oregon Watershed Enhancement Board also cites 2,300 feet (page A-58, Appendix A-Ecoregion Description as a minimum elevation for the transient snow zone from which ROS generated peak flows in the coast range can occur. The transient snow zone is that area considered to be capable of accumulating snow for periods during the winter but is not cold enough to develop a snow pack that will remain for the entire winter season. Because of this ability to accumulate snow, the area can also release all the water in the snow pack when the area is subsequently hit by a warmer rain event. The resulting stream flows from a rain-on-snow precipitation event can be extreme and very quickly flood the stream channel. Conversely, as a result of little or no snow pack accumulation and infrequent summer rainfall, stream flow in the summer is typically a fraction (less than 20 percent) of winter levels and many headwater channels retreat to subsurface flow. Because all of the proposed units fall below this elevation, there is currently a low risk for peak-flow enhancement in the two project watersheds.

Existing Peak Flow/Water Quality Effects from Roads
Road surfaces have been implicated as important contributors to increased peak flows. As the slope increases, the extent of surface and subsurface disturbance required to construct a stable road increases. Under the worse case scenario, more than 50 percent of cut banks near stream channels may intercept groundwater and rout it through road ditches (Toman, 2004). In addition, when road ditches drain intercepted water directly to streams, they act as an "extension" of the stream network and can have a measurable effect on stream flow which may include an augmentation of peak flows on a watershed scale (Wemple et al, 2003).

Streams near roads are at higher risk for water quality contamination from material washed off the road surface and for increased stream temperature as a result of reductions in streamside shading. During storms, runoff from unpaved forest roads may deliver sediment to streams resulting in increased sediment transport, deposition of fines in gravels and turbidity levels that exceed natural background levels. (Beschta, 1978; Binkley and Brown, 1993). Roads analyses completed for other larger projects in the Upper Alsea River and Marys River Watersheds (Yamaha LSR Enhancement and Rickard Creek Timber Sale EAs) in the recent past have shown that the project watersheds are well below the value where road related stream problems begin to appear. These projects do not propose any change in the road network and any equipment use would occur during the low precipitation times of the year.

Project area stream channels
Stream channels in the main project areas are primarily small 1st and 2nd order headwater streams; these are "source" reaches, following the classification of Montgomery and Buffington (1993). On the steeper slopes (10 to 20 percent), these have developed into constrained, step-pool channels typically less than ten feet wide. On very short segments of the road treatment zones, and inside the Alsea Falls Park, the South Fork Alsea River is within the treatment zone. This channel is perennial fish bearing and lower gradient than its tributaries. Even though the South Fork Alsea River had in-channel LWD placement completed in 2000 (Falls Over EA), all of the channels remain low in their amount of contributed large wood from nearby riparian forest but are well shaded. All hazard trees cut in the SPZs would be left as long as they do not pose a threat to safety of existing structures (culverts and bridges, etc.)

The remaining channels in the project area are small with intermittent or ephemeral flow. These small tributary channels formed in the silt loam soils in the project area and flow intermittently on the surface before disappearing underground, only to pop out again down-slope. Many are associated with high water tables in earth-flow terrain which forms in some of the softer slump deposits or on the surfaces of benches and flats. It's likely that ground water and intricate patterns of subsurface flow, as opposed to surface run-off, is the primary system of water delivery to these small channels. Most are lower gradient (less than 10 percent) with small substrates (sands and silts) reflecting the adjacent soils.

During field review of stream channels in the project area, the perennial channels were observed to be mostly stable (not experiencing channel changes outside the expected range of natural variability) and functional (the size of stream substrate and woody debris amounts are similar to reference streams in the Coast Range provence). Sediment supplies are in the range expected for their stream type (Rosgen , 1994).

Project area wetlands
No wetland\pond complexes are identified within the project areas.

Project Area Water Quality
Oregon Department of Environmental Quality (ODEQ)
The Oregon Department of Environmental Quality's (DEQ) 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 3 stream miles downstream of the proposed projects.

The DEQ 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 from river mile 0 to 17.2, (approximately 3 stream miles downstream of the proposed projects) is listed for having moderate water quality conditions affecting fish

and aquatic habitat. Marys River Watershed is listed for bacteria and water temperature and is currently under study for problem areas.

Beneficial Uses
Marys River is the drinking water source for the city of Philomath approximately 30 miles below the project area and located on a different fork of the river. Muddy Creek is the nearest affected stream within the Marys River Watershed and makes up approximately half of the total acres of the Marys River Watershed. There are no known municipal or domestic water users in the project area. There is an in stream water right along the South Fork Alsea River for anadromous and resident fish rearing approximately 8 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 aesthetic value.

Environmental Effects

3.1.5.1 *Alternative 1 (No Action Alternative)*

Under this alternative the existing water quality conditions, stream flows, and channel conditions at the project sites would continue their current trends. During field review of stream channels in the project area, the channels were observed to be mostly stable (not experiencing channel changes outside the expected range of natural variability) and functional (the size of stream substrate and woody debris amounts are similar to reference streams in the Coast Range provence). Sediment supplies are in the range expected for this stream type (Rosgen, 1994). Channel substrates are typically sand, with some pebbles and gravels. Some channel reaches contain large amounts of CWD. The remaining channels all contained sections of discontinuous flow where water went subsurface. No reduction of forest canopy would take place. No additional disturbance to flow paths resulting from timber harvest and road work/use would occur. Streams disturbed from past management would continue to display the above referenced stable conditions.

3.1.5.2 *Alternative 2 (Proposed Action)*

Hazard Tree Removal/Roadside Enhancement (Project 1) and Park Enhancement (Project 2)

Stream channels and wetlands: Direct and Indirect Effects
There would be no direct alteration of the physical features of the project area stream channels or wetlands under this proposal. There is no new road construction or maintenance proposed. Stream banks, wetlands and channel beds are protected from direct physical alteration or disturbance by equipment by implementation of SPZs. In addition, the proposed action is unlikely to affect stream flow in a measurable 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 measurable 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.

Watershed Hydrology: Direct and Indirect Effects

Mean Annual Water Yield
Since the project areas are located below the elevation zone normally subject to transient snow accumulations in the winter, the small reduction in stand density is unlikely to result in 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). The project acres shown below reflect that 0.1 percent of the Upper Alsea River and 0.006 percent of the Marys River Watershed would be impacted. In reality only a small portion of each area in the Alsea Falls Park and along the roads would have activities. This would lead to a smaller impact than the 0.1 percent level in the South Fork Alsea River Watershed and would not be measurable in either of the watersheds. Therefore, this proposal is unlikely to result in any detectable changes in peak flows.

Upper Alsea Watershed	
124 acres	*12 acres*

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 and thus it would maintain the current condition and trends relative to hydrology and stream flow**.**

Water quality: Direct, Indirect and Cumulative Effects
The water quality parameters such as stream temperature, dissolved oxygen (DO) concentrations (both inter-gravel and in water), hydrogen ion concentration (pH), and turbidity are not expected to be impacted by this proposal. For that reason there are no expected direct, indirect or cumulative effects to water quality from the completion of this proposal.

Based on the USFS - Human Health and Ecological Risk Assessment for Sporax**,** adverse effects of environmental exposure to the aquatic resource does not appear to be a risk especially given the atypical application method for Sporax. Widespread exposures to water are not likely.

3.1.6 **Wildlife**

Affected Environment

<u>Hazard Tree Removal/Roadside Enhancement (Project 1) and Park Enhancement (Project 2)</u>

Landscape Level Conditions
Both proposed projects occur adjacent to each other on BLM managed lands in the Upper Alsea River 5th Field Watershed. The BLM managed lands in this landscape were extensively logged in the late 1940s through mid 1980s. Private timber lands were also logged during this period with a recent upturn in harvest activity. A summary of forest habitat conditions presented in the South Fork Alsea River Watershed Analysis (USDI-BLM 1995) shows that 17,360 acres (43 percent) of the South Fork Alsea Watershed is composed of early to mid-seral habitats. About 8,300 acres of this habitat lies on BLM land (37 percent). The BLM managed lands also have interspersed small patches of late-seral and old-growth stands. The intervening parcels of private ownership are dominated by early-seral and mid-seral forest stands that are currently being managed on rotations of 40 to 60 years.

A broad-scale analysis of federal lands within this part of northern Oregon was presented within the *Late Successional Reserve Assessment, Oregon Coast Province - Southern Portion (RO267, RO268),* [referred to as the LSRA, see USDA-FS and USDI-BLM 1997]. The LSRA considers this landscape to function as an important corridor of mixed seral stages which form a connecting linkage to adjacent blocks of federally managed lands farther west, and much of this BLM managed land is expected to grow into older forest habitat over the next several decades.

Stand Level Conditions

The forest stands in Project 1 that lie adjacent to (less than 100 feet) Road #14-6-34.1 are considered edge habitats. Most of these stands extend well beyond the 100 foot limit of proposed hazard tree unit boundaries. The portion of these stands that are within the treatment units have localized clumps of high conifer tree density, moderate to high canopy closure, and are intermingled with hardwoods and shrub patches, especially near the road edges. The small cluster of older forest snags in Section 26 lie just beyond 100 feet from the road at the bottom edge of a larger older forest patch (greater than 120 years old). Project 2 stands form a narrow strip of mid-seral forest habitat that is wedged between South Fork Alsea Access Road and South Fork Alsea River (200 to 500 feet wide).

Coarse Woody Debris

Coarse wood includes downed wood, snags, and live trees with dead or broken tops or decay. Data on coarse wood was not collected for the stands in Projects 1 or 2. In Project 1, because the proposed treatment is limited in scale to a narrow strip fronting the South Fork Alsea Access Road, and limited to removal of hazard trees and imminent mortality, it is expected to have little effect on coarse wood at the stand level. In Project 2, LSR objectives for coarse wood levels are constrained by public safety and aesthetics. Therefore, data was not collected to establish a baseline quantity relative to LSR objectives.

Special Habitats and Special Habitat Components

The Salem District RMP has recognized that special habitat features (caves, cliffs, exposed rock, talus, wetland types, and meadows) add valuable wildlife diversity to the local landscape. Within the proposed treatment units for Project 1 and 2, there are no known special habitat features.

The habitat components most important to wildlife in conifer forests of the Oregon Coast Range are very large diameter remnant/legacy live and dead trees. In addition to remnant structure, the following types of trees also function as special habitat components: stand-age trees which were open-grown (wolf trees); older cohorts with full live crowns; trees with deformities like broken tops or witches' brooms, and large diameter deciduous trees like big-leaf maple. All these tree types provide a more complex stand structure, meet more wildlife needs than most trees in the stand, and make for a healthier functioning forest ecosystem. Larger diameter hard snags and CWD would, over time, provide for more wildlife species needs than smaller and softer snags and CWD. Project 1 and 2 units are generally lacking in these special habitat components, except for the snag cluster in Section 26 which is part of a larger and older forest stand where large live and dead trees are more abundant.

Special Status Species

Special Status Species that may occur within this project vicinity and which may be affected by the proposed action include the northern spotted owl, marbled murrelet and red tree vole. A review of an interagency database (GeoBOB) and the Oregon Natural Heritage Database found no records of any other SS Species locations within or adjacent to the planned treatment units.

Northern Spotted Owl

The BLM and cooperators have conducted extensive spotted owl surveys in this vicinity since the mid 1980s. There are two active spotted owl sites within 1 mile of the project areas. Both of these sites are beyond 0.25 miles of the proposed project units. But, over the years, owls have been detected roosting and foraging within 0.25 miles of the proposed units for Projects 1 and 2. The proposed treatment units for both projects do not provide suitable habitat for spotted owls, but they may provide rather poor quality dispersal habitat since they are relatively small areas that receive high levels of human disturbance (i.e., well-traveled road and recreation site). Most of the project areas, (except Sections 21 and 23) fall within critical habitat (OMOCA-36) that has been designated for spotted owls (USDI-FWS 2008a, USDI-FWS 2008b). There are 57,370 acres of federal lands within OMOCA-36. Dispersal habitat is considered a constituent element of spotted owl critical habitat (USDI-FWS 2008b).

Marbled Murrelet

There are no occupied marbled murrelet sites within 1.0 mile of any proposed unit in Projects 1 or 2. The proposed project units occur almost entirely within forest stands that do not contain suitable nesting structure for marbled murrelets. The exception is the small cluster of snags at the lower edge of an older forest stand in Section 26. BLM managed lands within these project areas which have LSR designation, also have been designated as a critical habitat unit for the murrelet (CHU: OR-04-j).

Red Tree Vole

The red tree vole is a Bureau Sensitive Species (BSS) and currently a Survey and Manage Species (USDA-FS and USDI-BLM 2001). The BSS status only applies to the red tree vole populations in the northern Oregon coast range, north of Highway 20 (Corvallis to Newport). Populations south or Highway 20 including those within the Upper Alsea River watershed are believed to be more abundant and well distributed (USDA-FS and USDI-BLM 2007). As a result of a December 2009 court ruling, the red tree vole has been returned to a Survey and Manage species in both project areas. However, surveys for this species are not required within the proposed project areas since the habitat conditions within the mid-seral forest stands (less than 80 years old) did not trigger the need for surveys. Voles prefer to nest in older forest habitats in this landscape, but are occasionally found occupying mid-seral forest stands similar to those included in Projects 1 and 2.

Riparian Reserve Species

Most of the proposed treatment units in Projects 1 and 2 are overlaid with RR LUA designation. One of the many functions of the RR LUA is to provide habitat for riparian-dependent and associated species, and specifically for the following native wildlife species: all mollusks, all amphibians, all bats, marbled murrelet, northern spotted owl (dispersal habitat function), red tree vole, and the American marten. Several mollusk, amphibian, and bat species are expected to occur within the RR LUA of the proposed action area. The American marten is rare in the northern Oregon Coast Range and is not expected to occur in the action area. Townsend's big-eared bat is also not expected to occur in the action area due to the lack of any caves or cave-like structures which are necessary for their roost sites.

Bird Species of Conservation Concern

There are 88 native bird species, of which 34 are migratory Bird Species of Conservation Concern that nest in the mid and late-seral forest habitats of the central Oregon Coast Range. Many of these species are expected to breed in or adjacent to the project areas. The critical breeding period for most of these species is from April 15 to July 15. See Appendix B for a table of all currently listed migratory birds and Species of Conservation Concern that occur in the Marys Peak Resource Area.

Environmental Effects

3.1.6.1 *Alternative 1 (No Action)*

This alternative would not conduct any hazard tree removal or harvest within the forest stands of the proposed action for these project areas. There would be no immediate change to the mid-seral forest conditions within BLM managed lands in this watershed. Stand development processes would continue unaltered within the forest stands of these project areas. Many of the currently identified hazard trees would be expected to fall at similar rate as previously occurred. The current pattern of habitat use by wildlife species within these project areas would be expected to continue unchanged. Dispersal habitat conditions for spotted owls would remain unchanged. Given the current rate of harvest on adjacent private industrial forest lands, the landscape in the immediate vicinity is expected to remain highly fragmented and dominated by early seral and mid-seral forest conditions for the foreseeable future.

3.1.6.2 *Alternative 2 (Proposed Action)*

Hazard Tree Removal/Roadside Enhancement (Project 1) and Park Enhancement (Project 2)

Landscape Level

The hazard tree removal and park enhancement treatments would maintain the functionality of the mid-seral forests within this landscape. There would be no discernable change in landscape conditions, since only about 174 acres would be affected in several small treatment units that are scattered across several parcels of BLM managed lands within these watersheds.

Stand Level

Project 1 would remove only those suppressed trees or leaning trees which are likely to fall toward the road and cause a hazard. Fuels reduction would remove much of the heavier slash from the treatment units. This action would approximate a very light thinning harvest which would retain tree species diversity and canopy closure (greater than 40 percent) in these stands. There would be a localized loss of small snag recruitment, retention of some small slash, and creation of small openings that may disrupt the current pattern of wildlife use for the short-term. These minor short-term changes to habitat conditions at the stand level would only extend 100 feet from the road edge and would leave the connected stand conditions that lie beyond 100 feet unchanged. These changes would occur adjacent to an existing habitat edge (road side opening) which would favor some species (several small mammals, some bird species) that are associated with more open forest and habitat edge conditions.

Project 2 would reduce the density of the mid-seral forest on about 21 acres. Like Project 1, the park enhancement would also retain tree species diversity and canopy closure (greater than 40 percent) while creating a localized loss of small snag recruitment. The reduced canopy closure, loss of small snags, increased growth of shrubs, and minor slash created may disrupt the current pattern of wildlife use for the short-term. These minor short-term changes to habitat conditions would be quite localized (21 acres) leaving the adjacent mid-seral forest stands unchanged. The replacement of the waterline in this project area would have a negligible effect on stand conditions that would not be discernable from the effect of the thinning harvest.

Special Habitats and Special Habitat Components

No special habitats would be affected by Project 1 or Project 2. The only special habitat component that would be affected is the small cluster of large snags at the edge of an older forest patch in Section 26 (part of Project 1). These snags likely provide for cavity nesting, roosting, and foraging habitat for a variety of wildlife species. Managing snag structure and decadence processes within forest stands is recognized as an important component in maintaining forest health and restoring late-successional forest conditions (Rose, et al. 2001, Hagar 2007, Mellen, et al. 2006). Although the loss of a few snags would slightly

diminish the local abundance of large snags at this location (2 acres), the felled snags would remain as down logs and the connected patch of older forest (42 acres) would continue to function as high quality late-seral forest habitat.

Special Status Species
Refer to Appendix A for a table summarizing the impacts of this action on all SS Species in the Resource Area.

Northern Spotted Owl
There would be no anticipated disturbance to spotted owls since there are no known nest sites within 0.25 miles of the proposed units in Project 1 and Project 2. Over the years of spotted owl monitoring, owls have been detected foraging within 0.25 miles of the proposed hazard tree units in Section 21, 23, and 26. But neither Project 1 nor 2 would affect the suitable habitat conditions available for spotted owls in this area. The felling of a few snags at the edge of an older forest patch would not impair the function of this patch as suitable habitat for owls. Projects 1 and 2 would slightly alter but maintain the dispersal habitat quality of the mid-seral stands that are treated. About 110 acres of this dispersal habitat lies within OMOCA-36. The proposed action is considered a may affect, but not likely adverse affect to this designated critical habitat.

Marbled Murrelet
The proposed action (Project 1 and 2) would not affect marbled murrelet suitable habitat nor designated critical habitat. The removal of some larger snags in the older forest patch in Section 26 would not affect any suitable nesting structure. Some of the proposed treatment units in Project 1 lie within 0.25 mile of unsurveyed suitable habitat for murrelets. However, no noise disturbance is anticipated since the proposed action would be restricted to occur outside of the marbled murrelet critical nesting season.

Red Tree Vole
The proposed action would occur in forest stands that may have some active red tree vole nests. However, this proposed action is not anticipated to have an appreciable effect on the population of red tree voles in this watershed since voles are well distributed throughout the watershed and since this action would not remove any older forest stands which provide the best habitat for supporting vole population persistence.

Bird Species of Conservation Concern
In the central Oregon Coast Range the majority of birds complete their breeding cycle within the April 15 to July 15 time period while some birds (eagles; owls; hawks; woodpeckers) begin breeding as early as February or March and others (flycatchers; finches) do not finish breeding until August. Due to the ubiquitous nature of breeding birds, soil disturbance (affecting ground-nesting birds) and vegetation manipulation would have a direct negative impact on bird nesting success if it occurs during the breeding season. There is a high likelihood that some level of disturbance to nesting birds would occur if Project 1 thinning operations are conducted during the February-August breeding season. Project 2 impacts would not disturb nesting birds since the treatments would occur after August and before February.

Project 1 and 2 treatments are not expected to modify bird nesting and foraging habitats to the point that some species are no longer able to occupy the site. Research shows that bird species respond differently to changes in their nesting and/or foraging habitats; some populations seem to be unaffected by thinning (for example, Stellar's Jay, Black-headed Grosbeak), some decrease in numbers (for example, Golden-crowned Kinglet, Hermit Warbler, Pacific-slope Flycatcher, Varied Thrush), and others increase (for example, American Robin, Hairy Woodpecker, Dark-eyed Junco, Western Tanager). Responses to thinning can occur immediately and then change slowly over time. In some cases short-term (0-5 years)

decreases can lead to mid-term (6-10 years) and/or long-term (10+ years) increases (for example, Hermit Warbler, Varied Thrush); in other cases just the opposite response can occur (for example Olive-sided Flycatcher, Evening Grosbeak, Townsend's Solitaire).

In general, species that nest and/or forage in closed canopies would show declines commensurate with the intensity of the thinnings, and species that nest and/or forage in open forest canopies usually increase in numbers. Species that nest and forage on the ground and in the understory usually maintain their pretreatment abundance or show an increase in abundance after the thinning.

3.1.7 Fuels/Air Quality

Affected Environment

Hazard Tree Removal/Roadside Enhancement (Project 1) and Park Enhancement (Project 2)

Fuels

The proposed project areas are presently occupied by a light accumulation of small and medium diameter dead woody material and leaf litter on the ground. Larger 20 inch diameter downed logs are scarce as are large snags. Small snags less than 12 inches DBHOB are fairly common. Based on visual estimates, fuel loading in the timber stands ranges from less than 10 up to 25 tons per acre. Much of the existing down material is rotten or only partially sound.

All aspects are found on the proposed treatment units with the majority of the aspects being northerly or southerly. Approximately 30 percent of the proposed treatment area has flat to 10 percent slopes. Ten percent to 35 percent slopes are present on approximately 60 percent of the proposed treatment areas. On the remaining areas to be treated, the slope ranges from 35 percent up to approximately 60 percent.

With the exception of the Alsea Falls Park, the area is industrial forestry land. The park has a few structures within it functioning as restrooms and maintenance buildings.

Air Quality

Air quality in the vicinity of this proposed project is generally very high due to the location of the project areas in the Oregon Coast Range. Transport winds affecting the area generally come in off the ocean and keep the air shed scoured out preventing a buildup of particulate matter. Occasional stagnant air conditions do develop and may result in accumulation of particulate matter but generally these are short lived lasting less than 1 week.

Environmental Effects

3.1.7.1 *Alternative 1 (No Action)*

Hazard Tree Removal/Roadside Enhancement (Project 1) and Park Enhancement (Project 2)

This alternative would result in no change to the affected environment. Short-term impacts to fuels and air quality would be avoided. However, the positive immediate and long-term benefits due to the decrease in fire hazard and risk following the proposed treatment would not be recognized.

3.1.7.2 *Alternative 2 (Proposed Action)*

Hazard Tree Removal/Roadside Enhancement (Project 1)

Fuels

Fuel loading, risk of a fire start and the resistance to control a fire, would all increase to a small degree at the sites. Slash created from timber harvest would add an estimated 1 to 5 tons per acre of dead fuel to the areas where selected hazard trees are cut.

Risk of a fire start in the untreated slash would be greatest during the first season following cutting, - the period when needles dry out but remain attached. These highly flammable "red needles" generally fall off within one year and risk of a fire start greatly diminishes. Fire risk would continue to diminish as the area "greens up" with under story vegetation, and as the fine twigs and branches in the slash begin to break off and collect on the soil surface. Past experience, in the geographic area of this proposed action, has shown that, in approximately 15 years, untreated slash would generally decompose to the point where it no longer contributes significantly to increased fire risk.

Depending on the amount of large, down wood left on site from logging, the resistance to control would also decrease over time but more slowly. This is what is expected to occur for the areas considered in this proposed action where the slash created would be left in place, untreated. The resulting total residual dead fuel loading would vary through out the site ranging from 5 to 30 tons per acre. It is expected that more than 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 8 inch and larger size class.

Air Quality

The total amount of slash debris expected to be piled for burning is estimated to be less than 100 tons from the treated areas along the road. Burning less than 100 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. Locally within ¼ to ½ mile of the piles there may be some very short-term smoke impacts after piles are ignited resulting from drift smoke. Generally, once covered, fire intensity of dried piles builds rapidly to a point where the fuels burn cleanly and very little smoke is produced. The strong convection column produced carries the smoke and gases well up into the atmosphere where it is diluted and carried away in the air mass. After a few hours, as the piles burn down and the intensity subsides, additional smoke may be produced due to lower temperatures and less efficient combustion.

Depending on size, arrangement, type and moisture content of the remaining fuel, 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 to ½ 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.

Burning of slash would always be coordinated with the Oregon Department of Forestry and conducted in accordance with the Oregon State Smoke Management Plan. This serves to coordinate all forest burning activities on a regional scale to prevent negative impacts to local and regional air sheds.

Park Enhancement (Project 2)

Fuels
Fuel loading, risk of a fire start and the resistance to control a fire, would all decrease in the park as a result of the proposed action. Slash created from timber harvest would be chipped and scattered on the site. Due to the moist nature of the site the chips are expected to pose little fire risk. Any fire that might occur would spread very slowly with minimal flame length and be easily controlled. The chipped material is expected to break down and be incorporated in the surface soils within a decade.

Although not the stated purpose of this proposed action, increasing the spacing between the tree crowns would have the beneficial result of decreasing the potential for crown fire occurrence in the treated stand. By chipping the slash and ladder fuels it would be highly unlikely for any fire to build enough intensity to enter the crowns of the residual stand.

Air Quality
There would be no effect on air quality from this proposed treatment as no burning would occur.

3.1.8 Carbon Sequestration (Storage) and Climate Change

On July 16, 2009, the U.S. Department of the Interior withdrew the Records of Decision (2008 ROD) for the Western Oregon Plan Revision. The information contained in the Final Environmental Impact Statement for the Revision of the Resource Management Plans of the Western Oregon Bureau of Land Management (2008 FEIS) is relevant since it examined recent and applicable science regarding climate change and carbon storage. That analysis concluded that effects of forest management on carbon storage could be analyzed by quantifying the change in carbon storage in live trees, storage in forests other than live trees, and storage in harvested wood. The discussion on Volume I, Pages 220-224; Volume II, Pages 537-543, and Volume III, Appendices, Pages 28-30 are relevant to the effects analysis for this project and are incorporated by reference.

Context –Greenhouse Gases, Climate Change and the Spatial Scale for Analysis

Greenhouse Gases, Climate Change and the Spatial Scale for Analysis
Uncertainty about the nature, effects and magnitude of the greenhouse gases and global climate change interrelationship is evident in a wide range of conclusions and recommendations in the literature reviewed. However, Forster et. al. 2007 (pp. 129-234), which is incorporated here by reference, concluded that human-caused increases in greenhouse gases are extremely likely to have exerted a substantial effect on global climate. The U.S. Geological Survey, in a May 14, 2008 memorandum to the U.S. Fish and Wildlife Service, summarized the latest science on greenhouse gases and concluded that it is currently beyond the scope of existing science to identify a specific source of greenhouse gas emissions or sequestration and designate it as the cause of specific climate impacts at a specific location. This defines the spatial scale for analysis as global, not local, regional or continental. That memorandum is incorporated here by reference. Based on the BLM's review of statutes, regulations, policy, plans and literature, the BLM accepts the conclusions above as appropriate context for a reasoned choice among alternatives.

Context – Temporal Scale for Analysis
The BLM has selected twenty years as the analysis period of carbon storage for this project, because it encompasses the duration of the direct and indirect effects on carbon storage. In twenty years, stands in

the project area will have nearly returned to current carbon storage levels, and carbon storage will have offset carbon emissions resulting from harvest.

Context – Calculations of Carbon Storage, Project Area Scale
The purpose of the calculation of carbon storage is to provide a basis for determining significance of carbon storage relative to the temporal and spatial scale. The BLM used site specific data from stand exams as input to the ORGANON stand growth model (v. 8.2, 2006) to predict stand growth to calculate live tree carbon under each alternative. Calculations from Smith et. al, 2006 were used to calculate carbon in the 'other than live trees' category.

Greenhouse gas emission from harvest operations are based on empirical analysis of fuel use per thousand board feet from past timber sales. The estimates of emissions from prescribed fire (burning of landing piles) are based on quantity of slash accumulations typically produced in similar projects.

The *2008 FEIS* analyzed carbon stored in harvested wood in using a factor from Smith et al. 2006, p. 35 for converting board feet of harvested wood to carbon. Based on information developed after the *2008 FEIS*, this factor has been refined to better account for regionally-specific conditions and the proportion of harvested volume that is typically milled into solid wood products and into processed wood products. Harvest volumes were converted to cubic feet, converted to pounds of biomass, and then to carbon content, yielding an overall conversion factor of 1,000 board feet = 1.326 tonnes of carbon (R. Hardt, personal communication, 11/09). Of this total amount of carbon in harvested wood, 63.8% of harvest volume is considered as sawlogs and 36.2% as pulpwood (GTR RM-199, Table B-6), for evaluation using the storage rates over time from Smith et al. 2006, p. 27. The improved conversion factor is used in this analysis to evaluate the amount of carbon stored in harvested wood. The effect of the 2008 FEIS alternatives on carbon storage has been reanalyzed based on this improved conversion factor. This reanalysis revealed a slight increase in the amount of carbon storage over time for all alternatives and less difference among the alternatives than described in the 2008 FEIS, pp. 537-543, but no change in the magnitude or trend of effects on carbon storage from that described in the 2008 FEIS.

Affected Environment
The 2008 FEIS described current information on predicted changes in regional climate (pp. 488-490) , concluding that the regional climate has become warmer and wetter with reduced snowpack, and continued change is likely. However, because of uncertainty about changes in precipitation, it is not possible to predict changes in vegetation types and condition, wildfire frequency and intensity, streamflow, and wildlife habitat.

Under average historic conditions (2008 FEIS, p. 3-211), BLM-managed lands in western Oregon stored 576 million tonnes of carbon, 35% more than is currently stored in forests and harvested wood today, due to the greater proportion of young stands on those lands today (2008 FEIS, p. 3-224).

The proposed actions is to conduct density management harvest on approximately 26 acres and hazard tree removal on 115 acres.

Carbon Storage

The following show quantities of carbon in forest ecosystem vegetation[9] in the Coast Range, and in the project area.

[9] Carbon contained in both above ground and below ground parts of trees and forest vegetation, and downed wood, litter and duff. It does not include mineral carbon in soil, nor fossil fuels.

- Total carbon, forest ecosystem vegetation, Pacific northwest, Coast Range 1.8-2 Giga-tonnes (Gt) (Hudiburg, et al. 2009).
- Total carbon, forest ecosystem vegetation, South Fork Alsea River Hazard Tree Removal and Park Enhancement Project stands = 5,81*0* tonnes or 0.0001676 Gt. This represents *.001%* of the Coast Range total.
- The annual carbon accumulation from forest management in the United States is 191 million tonnes. Current management on BLM-managed lands in western Oregon would result in an average annual accumulation of 1.69 million tonnes over the next 100 years, or 0.9% of the current U.S. accumulation. (WOPR, p. 4-537).

Carbon in forest ecosystem vegetation can be divided into three pools, and form the basis of the analysis for carbon storage and emissions for the South Fork Alsea River Hazard Tree Removal and Park Enhancement projects:

- Live trees (foliage, branches, stems, bark and live roots of trees),
- Forest carbon other than live trees (dead wood and roots, non-tree vegetation, litter and soil organic matter) and
- Harvested wood products.

Emissions of carbon resulting from timber harvest can be divided into several sources:

- Equipment used to harvest and haul logs,
- Disposal of harvest-generated fuels or slash by burning,
- Harvested wood products that are disposed of as waste, burned without energy capture, or discarded over time and allowed to decay.

Environmental Effects

3.1.8.1 *Alternative 1 (No Action Alternative)*

Under the no action alternative, no greenhouse gases would be emitted from harvest operations or fuels treatments. Carbon stored in live trees would not be converted to the harvested wood carbon pool. A portion of the carbon currently stored in live trees would be converted over time to the forest 'carbon other than live trees' pool through ongoing processes of tree mortality.

After 20 years of growth, live tree carbon would increase to 6,600 tonnes, an increase of 1,700 tonnes from the current level of 4,900 tonnes.

The no action alternative would result in greater net carbon storage over the 20 year analysis period than the proposed action by approximately 1,400 tonnes.

3.1.8.1 Proposed Action

Short-term Impacts (0-10 years after timber harvest):

Harvest Operations
Equipment use necessary to harvest and transport the timber to the nearest mill (Bellfountain, Oregon) would consume an estimated 1,400 gallons of fuel, or total emissions of 7 tonnes of carbon. (This includes 141 acres of conventional yarding).

Live Trees
Live trees would be removed, decreasing live tree carbon from 4,880 to 3,100 tonnes, and transferring 1,800 tonnes of live tree carbon storage to other pools.

Forest Carbon Other Than Live Trees
Some carbon would be converted to forest carbon other than live trees - dead material that would store carbon and slowly release it through decay. Decay of dead material would result in slow release of carbon under all alternatives, and this analysis assumes that the rate of release would not differ among alternatives, including the No Action alternative. Emissions from decay of dead material are not quantified in this analysis. Burning of landing piles after harvest would result in 6 tonnes of carbon emitted.

Harvested wood
Harvested saw log gross volume of 529 mbf would contain 793 tonnes of carbon. Much of the emissions from harvested wood occur shortly after harvest. In the first 10 years after harvest, approximately 181 tonnes would be emitted.

Long-term Impacts (11-20 years after timber harvest):

Live Trees
Following harvest an average of 59 trees per acre would remain on site, and would store carbon as they grow. Additionally, new tree seedlings are likely to establish and grow, increasing carbon storage considerably. However, in order to avoid prediction error they are not included in this analysis, providing a conservative estimate of carbon storage. Carbon emissions resulting from the proposed action would be offset by carbon storage in tree growth approximately five years after harvest. Live tree carbon would equal the pre-treatment level after 30 years of growth. After 20 years of growth, carbon stored in live trees would be 4,600 tonnes, still 270 less than the current (pre-harvest) level of 4,870 tonnes.

Harvested wood
Harvested wood in the South Fork Alsea River Hazard Tree Removal and Park Enhancement project would contain 793 tonnes of carbon. From 11 to 20 years after harvest approximately 29 tonnes of carbon would be emitted from harvested wood, totaling 210 tonnes (31%) emitted without energy capture in the full 20 year analysis period. The balance, approximately 583 tonnes (69%) of the carbon would remain stored in products still in use and in landfills, or emitted with energy capture (based on regional averages, Smith, et al, 2006, WOPR, Appendix C:30).

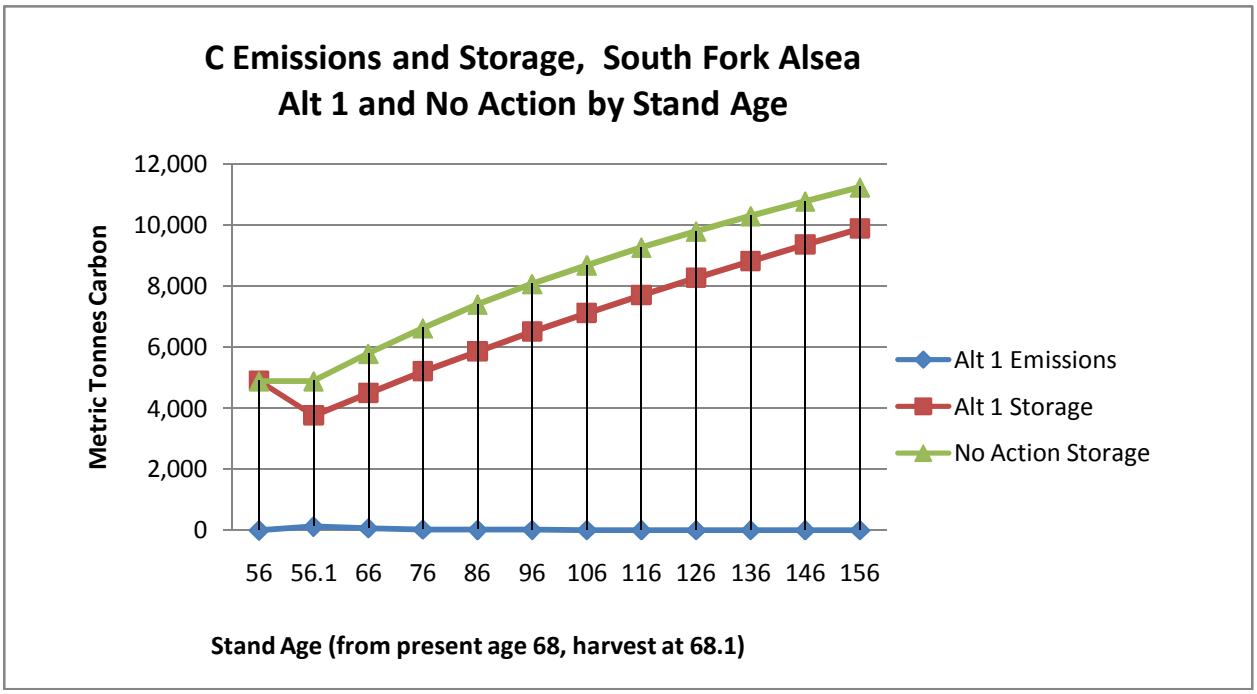
Summary of Carbon Storage and Greenhouse Gas Emissions
To summarize, total greenhouse gas emissions resulting from harvest, fuel treatment and harvested wood would be 223 tonnes, while storage would equal 312 (net storage of 89 tonnes) and include the following:

Short-term emissions (0-10 years post-harvest)
- Harvest operations emissions totaling about 7 tonnes
- Fuel treatment (burning) emissions totaling 6 tonnes
- Emissions from harvested wood 0 to 10 years after harvest of 181 tonnes

Long-term emissions(11-20 years post-harvest)
- Emissions from harvested wood, 11 to 20 years after harvest of 29 tonnes.

Long-term Storage (20 year analysis period)
- 580 tonnes of storage in harvested wood

- -272 tonnes net storage in live trees after 20 years of growth



4.0 Cumulative Effects

4.1 Vegetation

Age Class:
Due to ecological succession and forest management (mostly private land harvests), the amount of acreage in each age class within this watershed is in constant transition. Ecological succession would advance early seral forest plantations toward mid seral conditions, just as current and expected future harvests of mid seral stands would return these patches to early seral conditions.

Fire history and intensive forest management on both private and public lands over the past several decades has greatly reduced the amount of late seral forests and the quality and quantity of coarse woody debris in western Oregon forests (Moeur, et al. 2005, Hagar 2007). The prevailing management regime on private lands would likely involve alternating between mid seral and early seral habitat conditions over time without retaining any late seral forests patches for the foreseeable future. The proposed action would affect mid-seral stands aged 36 to 71 years but would not change the age class composition on BLM-managed lands in the watershed.

Native vegetation:
The perennial vascular plant species would persist on site post-treatment and their coverage would increase after treatment. As stand canopy again increases over time, conditions would become more similar to current or pre-treatment conditions.

Bureau Special Status Botanical and Fungal Species:
This project area currently provides suitable habitat for rare or uncommon botanical and fungal species. However, any coniferous forest over approximately 50 years of age and located in the northern Oregon Coast Range Mountains provides suitable habitat for rare or uncommon botanical or fungal species. Coniferous forests over 50 years of age are common and widespread in northwestern Oregon. If this project is implemented, it would take approximately 50 years for the area to once again provide suitable habitat for bureau SS botanical and fungal species. Although this area is considered as suitable habitat, there are no known bureau SS botanical or fungal species known from this area.

Invasive/Non-native Plant Species (including Noxious Weeds):
There would be no effect to Bureau SS species, but the projects would provide for additional habitat at a quicker rate when compared to the no action alternative.

Many past and present management and non-management activities tend to open dense forest settings and disturb soils therefore providing opportunities for widespread non-native plant (NNP) infestations to occur. Most NNPs are not shade tolerant and would not persist in a forest setting as they become out-competed for light as tree and/or shrub canopies close and light to the understory is reduced. In addition many NNPs are early successional species and are replaced by more dense growing shrubs and forbs that are common in western Oregon. The implementation of this project would likely increase the number of common and widespread non-native plant species that are known to occur within the Upper Alsea River Watershed. However, as discussed above, the risk rating for any adverse cumulative effects to the Upper Alsea River Watershed or any adjacent watersheds would remain low.

Examples of forest management activities and natural events within the Benton Foothills Watershed that would create soil disturbance, increase available light, and increase soil temperatures, all of which would influence the spread of NNPs are:

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

Activities that do not necessarily create disturbance but influence the spread of weed seeds are recreational hiking, biking, horseback riding, fishing and hunting.

Other sources of seed dispersal are from wildlife movement, water movement, natural dispersal and wind. Many past and present management and non-management activities tend to open dense forest settings and disturb soils, therefore providing opportunities for widespread NNP infestations to occur. Most NNPs are not shade tolerant and would not persist in a forest setting as they become out-competed for light as tree and/or shrub canopies close and light to the understory is reduced. The implementation of this project would likely increase the number of common and widespread non-native plant species that are known to occur within the Benton Foothills Watershed. However, as discussed above the risk rating for any adverse cumulative effects to the Benton Foothills Watershed or any adjacent watersheds would remain low.

4.2 **Recreation/Visual**

The proposed project would have a direct impact on recreation use at Alsea Falls and along the South Fork Alsea River National Back Country Byway. The project would occur after the 2010 camping season with the park closing Labor Day reducing disturbance to visitors and other recreation users. There are

alternative areas in the vicinity to do recreational activities while operations occur. The projects would visually would alter the landscape. This project may impact visitors but replacing the waterlines would improve overall safety of the water system at Alsea Falls. Thinning trees would contribute to the amount of timber cut in the watershed, but the amount is minimal compared to timber harvest practices on private lands where clear cutting is an often used harvest method. Large scale clear cutting practices affect the view more than a thinning or scattered removal of trees. Most recreation visitors want a variety of scenery. As with any timber management treatment, disturbed vegetation will take time to recover after the treatment activity. There are private clearcuts along the byway. Management of this landscape will continue through the BLM's strategic plan and private companies.

There have been three timber sales on BLM managed lands along the byway in the past 10 years. All had some minimal visual impact to users of the byway and Alsea Falls recreation site such as noise from logging equipment and increased byway traffic

4.3 **Soils**

Placement of water bars in skid trails and blocking off motorized access to skid trails would promote out-slope drainage and prevent water from accumulating and running down the skid trail surfaces in large enough volumes to cause erosion that could reach streams. A small amount of localized erosion can be expected on some of the tractor skid trails the first year or two following skidding. Eroded soil is not expected to move very far from its source (less than 100 feet) and would be diverted by the water bars or out sloping to spread out in the vegetated areas adjacent to the trails and infiltrate into the ground. After several seasons, the accumulated litter fall on the skid trails would reduce the impact of rain droplets on the soil surface further reducing the potential erosion of the skid trails.

Because the effects of the proposed action on soils are expected to be short-term (maximum one decade) and localized, cumulative effects are not anticipated. The combined effect of each of the proposed actions (tree felling, pile burning, CWD creation, and waterline replacement), would not lead to a measurable increase to the overall amount of compaction and erosion in the project area. The greatest cumulative effect on the site would likely be a slight reduction (less than 1% over the entire project area) in overall site productivity from top soil displacement.

4.4 **Water**

Stream channels and wetlands:
Since the proposal is 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 proposal would be unlikely to contribute to any potential cumulative effects in these watersheds. Over the long-term, the incremental improvement of forest stand characteristics (increased species diversity and wood recruitment) in the riparian areas would support the cumulative improvement in these conditions that is anticipated throughout these watersheds in response to the NWFP.

Peak Flow effects from Roads
The current condition of the watersheds in the project areas indicate low risk for an existing augmentation of peak flows from canopy reductions due to the proposal. The proposed removal of hazard trees along the South Fork Alsea Access Road would not result in any increase in forest openings in ROS and therefore would be unlikely to result in a detectable augmentation of peak flows. Proposed road use would not 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 proposal is not likely to result in a

detectable direct or indirect effect to peak flow, the proposal would be unlikely to contribute cumulatively to any existing augmentation of peak flow in these watersheds.

The Gotaway Timber Sale (EA #OR-080-00-08) cumulative effects analysis states that in almost all cases, removal of more than 20 percent of the vegetative cover over an entire watershed would result in increases in mean annual yield (Bosch, 1982). Removal of less than 20 percent of vegetative cover has resulted in negligible changes where it was not possible to detect any effect. Typically, increases in stream flow occur during periods of low soil moisture and are attributed to reductions in evapo-transpiration.

In addition to alterations in mean annual water yield, alterations in the timing and/or quantity of peak flow events as a result of forest harvest and road construction have been studied for several decades. Jones and Grant (1996) hypothesized that clear-cutting leads to increases in stormflow volume while road construction and wood removal from channels results in earlier, higher peak flows. Alterations in peak flow timing and quantity are particularly of concern in watersheds with potential for snow accumulation and quick melt-off during ROS such as occurred in the 1996 flood.

Using information based on a recent report by Grant (2008), an analysis was completed that totaled up the existing amount of harvested lands in the 6th field watersheds (Oliver Creek and South Fork of the Alsea River Watershed) in the project area. That analysis found that approximately 18.2 percent of the Oliver Creek Watershed and 11.7 percent of the South Fork of the Alsea River Watershed was in a "open" condition, meaning that the lands were either harvested and currently had less than 30 percent crown cover or were naturally open (meadows, rock slopes, etc).

The Grant paper set the peakflow detection level at 10 percent based on measurement error in natural stream systems and natural variability in stream systems. Adding in the proposed SF Alsea Road hazard tree removal and Park thinning acres (12 acres in the Oliver Creek Watershed and 187 acres in the South Fork of the Alsea River Watershed), the projected percent of the watersheds in an open condition increases to 18.3 percent in the Oliver Creek Watershed which would roughly relate to a cumulative mean predicted increase of 2 percent in peak flows. The range does extend up to 6 percent based on the regression line data shown in the envelope curve developed by Grant. For the South Fork of the Alsea River Watershed, the percent of the watershed in an open condition increases to 12.1 percent which would roughly relate to a cumulative mean predicted increase of 0.0 percent in peakflows. The range does extend up to 4 percent based on the regression line data shown in the envelope curve developed by Grant.

The analysis assumes no recovery of past harvest stands, (proposed Rickard Creek harvest activity in the Oliver Creek Watershed), and that the current level of harvest activity on private lands remains the same and that all the acres in the sale are resulting in less than 30 percent crown cover when completed. Based on these side boards, it is still expected that the addition of the proposed activities in both watersheds would still fall into the unmeasurable level for peak flow increases based on the Grant envelope curve and the peakflow detection level.

Taking into account the forseeable future BLM harvest activity in the Oliver Creek Watershed (Upper Oliver and Twisted Oliver Timber Sales) the additional 410 acres would increase the open condition to 20.9 percent which would roughly relate to a mean predicted increase of 3 percent in peakflows.

Looking at forseeable future BLM harvest activity in the South Fork of the Alsea River Watershed (Buck Roberts and Upper /Lower Alsea Timber sale) the additional 643 acres would increase the open condition to 14.3 percent which would roughly relate to a mean predicted increase of 0 to 4 percent in peak flows. Even with the addition of the potential future sale activity, both watersheds would still fall into the

unmeasurable level for peak flow increases based on the Grant envelope curve and the peakflow detection level.

The risk for contributing to cumulative effects to hydrologic processes or water quality in the watershed is low. Because of felling requirements near stream areas, the extent that the proposal could likely contribute to an increase in the supply of large wood to channels is moderate. Since LWD and pool habitat are "at risk" in the South Fork Alsea Watershed, long-term LWD supply to streams is likely the most critical factor for maintenance of aquatic habitat in these watersheds. This proposal would likely improve LWD supply.

Additional projects of this scope are in the planning stages for 2010, 2011 and 2013 in the Upper Alsea watershed. A potential of 32 acres (Green Peak sale), 268 acres (Bummer Ridge sale), 354 acres (North Fork Overlook sale), 246 acres (Buck Roberts sale), and 20 acres of the Reflector sale. Additional projects in the planning stages for the Marys River watershed in 2010 and 2012 include; A potential of 126 acres (Green Peak sale), 220 acres (Watertank sale), 547 acres (Upper Oliver Creek sale), and 333 acres (Lower Oliver Creek sale). Even with all these additional activities added together the potential for impacts to peak flows still remains low

Watershed Hydrology:

No stream temperature data was available for this analysis. The channels are generally shaded by alder, conifer, ferns and brush. Stream shading varies between dense canopy (greater than 80 percent angular canopy density) cover by conifers to open canopy (50 to 60 percent angular canopy density) at flatter reaches (Brazier and Brown 1972). Streams in the project areas are classified by the South Fork Alsea Watershed Analysis as having a "low" risk of detrimental changes in water temperature based on stream bank vegetation shading (Map Plate 9, USDI 1995). Based on field observations, aerial photo reviews of streams completed for the analysis of this EA, and modeling runs for the project area , current streamside vegetation and valley topography appears adequate to shade surface waters during summer base flow and it is likely that stream temperatures consistently meet the Oregon state standard (18 degrees Celsius) for these waters.

For the protection of stream channels and aquatic resources, SPZ's or no-treatment zones were applied to all stream channels and "high water table areas" in the project area. Stream buffers extend a minimum of 55 feet from stream channels and to the extent of the riparian vegetation around "wet areas". Sediment supplies are in the range expected for their stream type (Rosgen, 1994). Channel substrates are typically sand, with some pebbles and gravels. Some channel reaches contain large amounts of CWD. The remaining channels all contained sections of discontinuous flow where water went subsurface.

An analysis of sediment and temperature cumulative effects on BLM lands was completed in the *Final Environmental Impact Statement for the Revision of the Management Plans of the Western Oregon Bureau of Land Management* (FEIS 2008). This analysis is located on pages 759-775 of Volume II. BMPs used to limit sediment introduction to water sources are listed in Appendix I (Pages 268-316) in Volume III of the FEIS. The appropriate BMPs needed to maintain the existing sediment regime in the stream systems are listed in Chapters 2 of this document. The FEIS analysis combined with this more site specific analysis results in no anticipated effects to stream sediment or temperature from existing conditions.

No burning would occur within SPZs to protect water resources and the remaining vegetated buffer would filter out any potential sediment delivered from upslope areas. Based on previous burning projects, it is not expected that any erosion would occur from these areas due to the burning and thus there would be no

impact to sediment generation or nutrient levels available to the remaining vegetation which would maintain the productivity of the stand.

4.5 **Fisheries/Aquatic Habitat**

The proposed stand treatments 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. As short-term LWD recruitment is protected and long-term LWD recruitment is enhanced, only slightly positive cumulative effects are anticipated for instream structure from the proposed actions.

Cumulative impacts to fishery resources could occur if proposed actions result in alterations in runoff contributing to changes in flows where fish reside. Based on the Hydrology reports analysis of alterations to peak flows in the project area (Wegner 2009), changes in flows were considered unmeasurable at the site level and are unlikely to contribute to cumulative effects, subsequently, no cumulative effects are anticipated on aquatic resources.

The Hydrology report indicated that the proposed treatments were considered unlikely to have detectable affects on stream temperatures and not expected to result in any cumulative effects to temperature (Wegner 2009). No cumulative effects are anticipated for peak flows, streambanks, and instream structure which could also affect temperature. As no cumulative effects were anticipated for these project activities on temperature, streambank conditions, and peak flows, these treatments would not result in cumulative effects for fisheries resources.

Approximately 54 percent of the land base within the Upper Alsea River Watershed is federally managed, by the BLM and Forest Service. The trend in LWD recruitment on federal lands is increasing as the stands mature within the Northwest Forest Plan designated Riparian Reserves (Reeves et al 2006). Analysis conducted under the 2008 FEIS indicated trends of LWD recruitment on all Western Oregon and Washington BLM managed Riparian Management Areas.
Private lands account for roughly 46 percent of the land base in the Upper Alsea River Watershed. An assessment of Oregon Forest Practices indicated on non-federally managed forest lands, roughly 94 percent of the riparian network would be considered inadequately stocked for future recruitment of LWD (IMST 1999). However, based on the various policies currently being applied to coastal Oregon forest lands, the amount of riparian area with large and very large conifer trees, which would contribute towards large wood recruitment, is projected to increase significantly (Spies et al 2007).

The BLM, industrial forest companies, and small land owners have conducted a variety of site level LWD enhancement projects in the Upper Alsea River Watershed in Tobe Creek, Peak Creek, and the Upper South Fork Alsea River. Future LWD enhancement work is planned in the South Fork Alsea River, Trout Creek, Peak Creek, Bummer Creek, and Fall Creek by the Alsea River Watershed Council, Mid-Coast Watershed Council, Forest Service, and BLM. Site level LWD restoration projects, both private and public, have locally increased LWD abundance. However, these projects are unlikely to detectably alter fish productivity at 5th field scale due to the small scale of project work and lack of connectivity between treatment areas.

Proposed road renovation activities associated with the mid-seral enhancement are unlikely to reach fish habitat and would not be expected to contribute to any cumulative effects. Hauling and culvert replacement may contribute a minor amount of sediment to the stream network in the wet season. Most haul routes are located near ridge tops with a limited number of stream crossings. Hauling and culvert replacement within the effected drainages are in close proximity to fish habitat; however, site level

impacts were expected to be unmeasurable. As site level impacts are anticipated to be unmeasurable, cumulative effects to aquatic resources would be unmeasurable.

Extensive road work has occurred on BLM, USFS and adjacent industrial forest over the last decade in the Upper Alsea River Watershed. In addition to timber sale road construction, substantial restoration work has occurred to improve road stability, reduce road generated sedimentation, and remove barriers to aquatic habitat movement at stream crossings. Site level road work, both private and public, have had negative and positive impacts on aquatic habitat. However, these projects are unlikely to detectably alter fish productivity at 5th field scale due to the small scale of project work and lack of connectivity between treatment areas.

Impacts of other hauling activities, from Forest Service and private forests, may contribute to cumulative impacts to fish habitat at the 5th field scale. However, the magnitude and extent of impacts from hauling are impractical to assess, or predict, due to high degree of variability of hauling which may occur within a watershed from one year to the next.

4.6 **Wildlife**

Due to ecological succession and forest management, the amount of habitat in each seral stage within a watershed is never stagnant, but rather it is constantly in transition from early open habitats toward mature forest stands. Hazard tree removal and thinning harvests such as the proposed action would alter a very small amount of the existing forest structure (about 200 acres), yet these treatments do not result in a loss of habitat for most of the wildlife species that are known or suspected to use these forests. The cumulative impact on habitat availability for wildlife species of concern resulting from the proposed action is considered negligible.

Within the northern Oregon Coast Range, the condition of dispersal habitat for spotted owls is a matter of elevated concern (Courtney et al. 2004, USDI-FWS 2008a). The proposed action (Project 1 and 2), which approximates a light thinning harvest on about 110 acres within OMOCA-36, would not contribute to any cumulative loss of dispersal habitat since the functional capacity for dispersal would be maintained.

4.7 **Fuels/Air Quality**

Hazard Tree Removal/Roadside Enhancement (Project 1) and Park Enhancement (Project 2)

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

In the treated areas along the Byway, there would be a slight increase in fuel loading and resultant fire hazard in the short-term, but that would diminish within a few years. Within the park there would be positive immediate and long-term benefits due to the decrease in fire hazard and risk following the proposed treatment. When looked at from a watershed scale, the selected harvest on approximately 174 acres of forest habitat would have very minor overall effects on the long-term (5 or more years) potential of the stands to carry a fire. The localized increase in fire risk along the Byway would diminish back to background levels within 10 to 15 years. If fuels are removed from the site for cogen power production,

fire risk would diminish immediately by a substantial margin. Within the Alsea Falls Recreation site, the fire risk should remain low for many years following the treatment.

4.8 Carbon Sequestration and Climate Change

Alternative 1 (No Action)

Incremental Effects of Project Related Greenhouse Gases and Carbon Storage*:*

This increase of 1,400 tonnes of live tree carbon would contribute to an annual average of 70 tonnes, or .00007% to the U.S. annual accumulation of carbon from forest management of 191 million tonnes. The WOPR EIS (p. 4-538), which is incorporated here by reference, states that by 2056, the No Harvest benchmark analysis (no future harvest of BLM-managed lands in the analysis area, as reanalyzed in November 6, 2009 memo, on file, Marys Peak Resource Area) would result in a total carbon storage of approximately 603 million tonnes, 5% higher than average historic conditions (576 million tonnes, WOPR, 3-224).

Greenhouse gas emissions and carbon storage over the 20 year analysis period resulting from the No Action are displayed in Table 9, below.

Comparison of Alternatives

Table 9. *Carbon Emissions and Storage, Comparison of Action and No Action Alternatives*

Source	***Proposed Action (Tonnes)***	***No Action Alternative (Tonnes)***	***Notes***
Emissions, 2010-2030	223	0	Logging, fuel treatments (burning), and emissions from harvested wood.
Live tree storage, 2039	4,600	6,600	20 years of stand growth
Live tree storage, 2009 (current conditions)	4,900	4,900	56 year old stand, 2009
Net change, live trees	-272	+ 1,700	Live tree carbon from growth 2009 - 2029
Harvested wood storage, 2059	583	0	69% of harvested wood carbon, 20 years
Total storage increase	**312**	**1,700**	Storage: live trees and harvested wood
Net Carbon Storage, Proposed Action	**89**	**1,700**	**Storage minus emissions, 2009-2029**

Under the No Action alternative, 30% more carbon would remain stored in live trees than under the Proposed Action during the 20 year analysis period. Under the Proposed Action, carbon would be released through logging, fuel treatments and emissions resulting from harvested wood, the majority (87%) within ten years after harvest. Stand growth subsequent to harvest would store carbon equivalent to those emissions within five years. Therefore, the period where emissions are greater than storage is less than five years, a temporary effect.

Under the No Action alternative, no carbon emissions would occur except for processes not considered in this analysis due to their relatively small effect. Emissions under the Proposed

Action would total 223 tonnes, equivalent to 5% of the current live tree storage in the project area, and approximately .00000004% of current U.S. annual emissions. The cumulative effect of management of BLM Western Oregon forest lands is a net increase of carbon storage above average historic conditions.

Emissions resulting from the Proposed Action would be small and temporary, and therefore not significant. Furthermore, it is currently beyond the scope of existing science to identify a specific source of greenhouse gas emissions or sequestration and designate it as the cause of specific climate impacts at a specific location.

5.0 Compliance with Components of the Aquatic Conservation Strategy

Existing Watershed Condition
The project areas are in the Marys River and Upper Alsea River 5th field Watersheds which drain into the Willamette River and the Pacific Ocean respectively.

Marys River Watershed
Three percent of the Marys River Watershed is managed by BLM, four percent is managed by the U.S. Forest Service, two percent of the watershed is managed by the U.S. Fish and Wildlife Service and ninety-one percent is managed by private land owners. Approximately 12 percent of the total BLM-managed lands consist of stands greater than 80 years old and approximately 22 percent of BLM-managed lands are located in riparian areas (within 100 feet of a stream).

Upper Alsea Watershed
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)

Aquatic Conservation Strategy Review

Table 10 shows the project's effect on the 4 components of the Aquatic Conservation Strategy (Riparian Reserves, Key Watersheds, Watershed Analysis and Watershed Restoration).

Table 10: Aquatic Conservation Strategy Review Summary (RMP pages 5 to 7)

Components	Effect	Remarks /References
Riparian Reserves	None	Riparian Reserve widths in the proposed project would be 480 feet on each side of perennial fish-bearing streams and 240 feet on each side of intermittent and perennial non-fish bearing streams, based on the average site tree height in the project area of 240 feet. Within Riparian Reserves, stands would be thinned outside the SPZs of a minimum 55 feet distance, and a minimum of 100 feet distance alongside streams classified as Essential Fish Habitat.
Key Watershed	None	Upper Alsea River and Marys River are not designated key watersheds.
Watershed Analysis	None	South Fork Alsea Watershed Analysis, October, 1995. Benton Foothills Watershed Analysis, December 1996.
Watershed Restoration	None	The proposed actions are not a component of the resource area's watershed restoration program.

Documentation of the Project's Consistency with the Nine Aquatic Conservation Strategy Objectives

Unless otherwise specified, the No Action Alternative would not prevent the attainment of any of the nine ACS objectives. Current conditions and trends would continue and are described in EA Section 3.2. Table 11 describes the project's consistency with the Aquatic Conservation Strategy Objectives.

Table 11: Project's Consistency with the Nine Aquatic Conservation Strategy Objectives

Aquatic Conservation Strategy Objectives (ACSOs)	The South Fork Alsea Access Road Hazard Tree Removal/Roadside Enhancement and Alsea Falls Park Enhancement Projects
1. Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features.	Does not prevent the attainment of ***ACSO 1***. **No Action Alternative:** The No Action alternative would maintain the development of the existing vegetation and associated stand structure at its present rate. The current distribution, diversity and complexity of watershed and landscape-scale features would be maintained. Faster restoration of distribution, diversity, and complexity of watershed and landscape features would not occur. The watersheds 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.
2. Maintain and restore spatial and temporal connectivity within and between watersheds.	Does not prevent the attainment of ***ACSO 2***. **No Action Alternative:** The No Action alternative would have little effect on connectivity except in the long term within the affected watershed. 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.
3. Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.	Does not prevent the attainment of ***ACSO 3***. **No Action Alternative:** It is assumed that the current condition of physical integrity would be maintained. Minimum 55 foot SPZ's would maintain the integrity of shorelines, banks and bottom configurations in the project area. Trees would be directionally felled within one tree height of the SPZ and any part that falls within the SPZ would be left on site, thereby preventing disturbance to stream banks and bottom configurations.

Aquatic Conservation Strategy Objectives (ACSOs)	The South Fork Alsea Access Road Hazard Tree Removal/Roadside Enhancement and Alsea Falls Park Enhancement Projects
4. Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems.	Does not prevent the attainment of ***ACSO 4***. **No Action Alternative:** It is assumed that the current condition of the water quality would be maintained. Stream temperature: According to the stream shading sufficiency analysis, the proposed SPZ's (minimum of 50 feet) was sufficient to protect critical shade in the primary shade zones, based on topography and average tree height. Stream shade would be protected in both projects. Sedimentation and stream turbidity: see No. 5 below
5. Maintain and restore the sediment regime under which aquatic ecosystems evolved.	Does not prevent the attainment of ***ACSO 5***. **No Action Alternative:** It is assumed that the current levels of sediment into streams would be maintained. The Projects 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.
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***. **No Action Alternative:** No change in in-streams flows would be anticipated. The proposed projects would not measurably alter instream flows. The projects would affect less than 0.006 percent of the forest cover in the Marys River Watershed and 0.13 percent of the Upper Alsea River Watershed. Proposed thinning projects would entail removing as few trees as necessary to achieve the purpose and need of the project. Therefore, direct effects from these projects on cumulative effects to streamflow are too small to be measured with reasonable accuracy.
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***. **No Action Alternative:** No change in in-streams flows would be anticipated. Design features for the 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. The proposed actions would not alter existing patterns of floodplain inundation or water table elevation as it would have no effect on existing flow patterns and stream channel conditions.

Aquatic Conservation Strategy Objectives (ACSOs)	The South Fork Alsea Access Road Hazard Tree Removal/Roadside Enhancement and Alsea Falls Park Enhancement Projects
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***. **No Action Alternative:** The current species composition and structural diversity of plant communities would continue along the current trajectory. Diversification would occur over a longer period of time. The actual riparian areas along streams would be excluded from treatment during the Projects by designating SPZs. There would be little or no change to riparian vegetation on banks or within the riparian zones along streams resulting from the proposed projects. The projects would require removal of localized vegetation, including occasional trees. In the long-term the projectswould have no effect on species or stand structural diversity. Overall diversity of riparian vegetation would not be affected.
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***. **No Action Alternative:** Habitats would be maintained over the short-term and continue to develop over the long-term with no known impacts on species currently present. Habitat to support well distributed riparian-dependent and riparian associated species would be restored by reducing overstocked stands, moderating tree species diversity and altering forest structural characteristics.

6.0 Contacts and Consultation

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

U.S. Fish and Wildlife Service

Wildlife: Due to potential effects to spotted owl dispersal habitat within OMOCA-36, Section 7(a) of the Endangered Species Act requires that this action receive consultation with the U.S. Fish and Wildlife Service. To address this issue the proposed action has been included within a Biological Assessment (BA) that analyzes all projects that may modify the habitat of listed wildlife species on federal lands within the Northern Oregon Coast Range during fiscal years 2009 and 2010. This proposed action has been designed to incorporate all appropriate design standards included in the BA. Upon completion of consultation, if any additional design standards are set forth in a Biological Opinion or Letter of Concurrence, then these standards would be incorporated into the design of this project prior to issuance of a decision record for these two projects.

National Marine Fisheries Service

Fish:

Project 1

The proposed action, with the incorporation of project design features, is considered a "may affect" to ESA listed OC Coho Salmon for hazard tree removal from stream protection zones within 1 mile of listed fish habitat or within 150 feet of listed fish habitat. A 'may affect' determination indicates consultation with NMFS for this project is required. The proposed project would comply with project design features as described under the programmatic Biologic Opinion resulting from the *Biological Assessment for Programmatic Forest Service and Bureau of Land Management Activities in Northwest Oregon* (May 2, 2008). Actions and effects beyond the scope of the NMFS programmatic consultation would require additional consultation with NMFS.

Project 2

The proposed action, with the incorporation of project design features, is considered a "may affect" to ESA listed OC Coho Salmon. A 'may affect' determination indicates consultation with NMFS for this project is required. Compliance of the thinning project with guidance described in *Endangered Species Act Section 7 Informal Consultation for the 2008-2009 North Coast Province Thinning Timber Sales Programmatic on Portions of the Siuslaw National Forest and Eugene and Salem Districts of the Bureau of Land Management, Seven Watersheds within the Oregon Coast Recovery Domain* (NMFS 2008) would provide consultation coverage for the May Affect actions of the Alsea Falls Park Enhancement thinning activities.

The proposed water system replacement project would comply with project design features as described under the programmatic Biologic Opinion resulting from the *Biological Assessment for Programmatic Forest Service and Bureau of Land Management Activities in Northwest Oregon* (May 2, 2008). Actions and effects beyond the scope of the programmatic consultation would require additional consultation with NMFS.

Protection of Essential Fish Habitat (EFH), as described by the Magnuson/Stevens Fisheries Conservation and Management Act, and consultation with NMFS is required for all projects which may adversely affect EFH of Chinook or coho salmon in the action area. The South Fork Alsea River is considered EFH to Alsea Falls.

6.2 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.

6.3 Public Involvement

- In compliance with the National Environmental Policy Act, a letter dated January 17, 2006, was sent to 3 adjacent landowners. No comment letter was received.
- A letter dated March 23, 2006, was sent to 18 potentially affected and/or interested individuals, groups, and agencies. One comment letter was received.
- In addition, a letter dated April 16, 2008 was sent to 21 potentially affected and/or interested individuals, groups, and agencies. One comment letter was received.
- A description of the project was included in the March, June, September and December 2008 project update to solicit comments on the proposed projects.

- A press release was sent to 5 newspapers on May 28, 2008.
- Posters describing the project was posted in late May, 2008 at the Alsea Falls Recreation Site along with flyers requesting public input.
- In addition, the original EA and FONSI document was made available for public review between January 5, 2009 and February 3, 2009. Six (6) comment letters/emails were received during the original EA comment period

6.3.1 EA public comment period

- The Revised EA and FONASI will be made available for public review July 14, 2010 to July 29, 2010. 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 July 29, 2010 will be considered in making the final decision for these projects.

7.0 List of Preparers

Table 12: Interdisciplinary Team Review

Affected Resource	Specialist	Initial	Date
Botany TES and SS Plant Species	Ron Exeter	RE	July 13, 2010
Cultural Resources	Heather Ulrich		
Fuels/Air Quality	Tom Tomczyk		
Fisheries/Aquatic Habitat	Scott Snedaker	SJS	7/13/10
Hydrology/Water Quality/Soils	Steve Wegner	SJW	7/13/10
Recreation/Visual	Traci Meredith	TMM	7/13/10
Wildlife TES and SS Animal Species	Scott Hopkins		
Vegetation	Hugh Snook	HWS	7/14/10
Harvest Systems	Cory Geisler	CSG	7/13/10
NEPA	Gary Humbard	GLH	7/13/10

8.0 Major Sources

8.1.1 Interdisciplinary Team Reports

Hopkins, S. 2010. Biological Evaluation FY2008 South Fork Road Hazard Tree Removal and Park Thinning Marys Peak Resource Area, Salem District, Bureau of Land Management. Salem, OR. 8 pp + appendix

Meredith, T. 2010. Recreation, Visual Resources and Rural Interface Report South Fork Alsea Access Road Hazard Tree Removal/Roadside Enhancement and Alsea Falls Park Enhancement Projects Marys Peak Resource Area, Salem District, Bureau of Land Management. Salem, OR. 6 pp.

Snedaker, S. 2010. Fisheries and Aquatic Habitat Report for SFK Alsea Hazard Tree / Alsea Park Enhancement EA Marys Peak Resource Area, Salem District, Bureau of Land Management. Salem, OR. 9pp.

Exeter, R. 2010. Botanical Report South Fork Alsea Hazard Tree/Park Enhancement Marys Peak Resource Area, Salem District, Bureau of Land Management. Salem, OR.

Snook, H. 2010. South Fork Alsea Access Road Hazard Tree Removal/Roadside Enhancement and Alsea Falls Park Enhancement Projects Silvicultural Prescription. Marys Peak Resource Area, Salem District, Bureau of Land Management. Salem, OR. 22 pp.

Tomczyk, T. 2010. South Fork Hazard Tree/Park Thinning Project Fuels Report. Marys Peak Resource Area, Salem District, Bureau of Land Management. Salem, OR.

Wegner, S. 2010. South Fork Alsea Access Road Hazard Tree Removal/Roadside Enhancement and Alsea Falls Park Enhancement Soils/Hydro Report. Marys Peak Resource Area, Salem District, Bureau of Land Management. Salem, OR. 9 pp

8.1.2 Additional References

USDA. Forest Service, USDI. Bureau of Land Management. 1994a. Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents within the Range of the Northern Spotted Owl and Standards and Guidelines for Management of Habitat for Late Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl. Portland, OR.

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

USDI. Bureau of Land Management. 1995. South Fork Alsea Watershed Analysis. Suislaw National Forest, Corvallis, Oregon and Salem District BLM, Salem, Oregon.

USDI. Bureau of Land Management. 1996. Benton Foothills Watershed Analysis. Salem District BLM, Salem, Oregon.

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

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

USDC National Marine Fisheries Service (NMFS) Endangered Species Act Section 7 *Informal Consultation for the 2007-2009 Thinning Timber Sales Programmatic on the Mt. Hood and Willamette National Forests and portions of the Eugene and Salem Bureau of Land Management Districts, 20 Watersheds.*

USDC National Marine Fisheries Service (NMFS) Endangered Species Act Section 7 *Biological Assessment for Programmatic Forest Service and Bureau of Land Management Activities in Northwest Oregon* (May 2, 2008).

USDA Forest Service and USDI Bureau of Land Management. 2008. Biological Assessment, Fiscal year 2009/2010 habitat modification activities in the North Coast Province which might affect bald eagles, northern spotted owls or marbled murrelets.

Crookston, Nicholas L. 1997. Suppose: An Interface to the Forest Vegetation Simulator. In: Teck, Richard; Moeur, Melinda; Adams, Judy. 1997. Proceedings: Forest Vegetation Simulator Conference. 1997. February 3-7, Fort Collins, CO. Gen. Tech. Rep. INT-GTR-373. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Research Station.

(was IPCC 2007) Denman, K.L., et al. 2007: Couplings Between Changes in the Climate System and Biogeochemistry. In: Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M.Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. http://www.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4-wg1-chapter7.pdf

Forster, P, et al. 2007. Climate Change 2007: The Physical Science Basis. Contribution of Working Group 1 to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Solomon, S. D., Qin, M. Manning, Z. Chen, M. Marquis, K.B. Averyt, M. Tignor and H.L. Miller, Eds. Cambridge University Press, U.K. and New York, N.Y. *(pp. 129-234)*. http://www.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4-wg1-chapter2.pdf

Hudiburg, T. Law, B. Turner, D. Campbel, J. Danato, D. and Duane, M. 2009. Carbon dynamics of Oregon and Northern California forests and potential land-based carbon storage. Ecological Applications, 2009: 163-180.

Smith, J.E. Heath L.S. Skog, K.E., and Birdsey, R.A. 2006. Methods for calculating forest ecosystem and harvested carbon with standard estimates for forest types in the United States. Gen. Tech. Rep. NE-343. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northeastern Research Station. 216 p.
http://www.treesearch.fs.fed.us/pubs/22954

(was U.S. EPA 2007) U.S. EPA Environmental Protection Agency. 2009. Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990 – 2007. U.S. EPA, Washington, D.C.
http://www.epa.gov/climatechange/emissions/usinventoryreport.html

9.0 Appendix 1 – Field Guide for Danger Tree Identification and Response

No worker exposure in the potential failure zone of danger tree is allowed by state safety laws.

There are three categories of work activities.
1. Traffic on roads.
2. Activities that do not impact the tree such as walking or conducting non-motorized activities that do not involve tree contact.
3. Motorized activities near the tree or activities that may cause the tree to be contacted.

Road traffic may or may not influence tree failure. This category is included because trees may fail and fall on vehicles or people congregated along roads, or they may fail and fall on roads and be driven into at a later time.

Walking by a tree or other non-motorized, non-tree contact activities are not likely to induce the tree to fail. The tree may fail due to either its condition or weather influences. Activities involving non-motorized, non-tree contact include planting and surveys.

Motorized activities or non-motorized activities that may contact the tree include road maintenance activities such as running a grader, culvert work, road construction, logging including timber falling, site preparation, road reconstruction, trail construction, and helicopter operations. All of these activities may induce tree failure.

Oregon OSHA Division 7, 437-007-0500 Roads (6). On those portions of roads under the direct control of the employer: (a) all danger trees that can fall or slide onto the roadways must be felled.

There are many miles of roads that may have danger trees adjacent to them. It is not possible to correct the danger tree problem immediately, so it is necessary to prioritize the highest risk where people are most likely to be impacted by danger trees. Consideration of exposure level and traffic frequency provides a way to prioritize the workload.

There are three types of exposure: intermittent, short duration, and long duration. Intermittent exposure includes traffic driving by a defective tree. Short duration exposure includes people

either stopping next to a defective tree, or stopping at an intersection that is next to a defective tree for up to 15 minutes. Long duration exposure includes people exposed to defective trees while parked at a trailhead, repairing a road, or working on a log landing.

Another aspect of exposure along roads is traffic frequency. Roads that have a higher traffic frequency expose more people to a danger tree than roads with a lower traffic frequency. The longer people are exposed to a tree, the more opportunity there is for the failed tree to impact them. If exposure duration and traffic frequency are reduced, the opportunity for the tree to impact people is also reduced. The qualified person should consider traffic frequency and exposure duration when determining whether a tree posses a danger to people.
For specific direction, refer to policy about danger trees along roads. When developing the road treatment priority, consider trees in the following situations.
Activity – Non-motorized, non-tree contact

These are activities that involve walking near trees without touching them. They are also non-motorized. The premise behind this activity type is that trees are less likely to fail if they are not contacted, and workers are more likely to recognize tree dangers if they are not focused on operating vehicles or machinery. Examples include tree planting, inventory (any type), surveying, walking to a jobsite along a trail, and designating timber.

With this type of activity, it is important to recognize trees that have an imminent failure potential. These trees may fail at any time so they are a danger to people regardless of the activity type. Because these trees expose people to dangers, only qualified employees under the direct supervision of the employer should enter the tree's potential failure zone.

There would also be trees that have a likely potential to fail. In order to determine if the tree is a danger to people, the qualified person needs to evaluate the tree condition, activity, and whether or not the person would be within the potential failure zone. If the qualified person determines that the likely failure potential tree does not represent a danger, people should work through the potential failure zone quickly so as to minimize exposure time and avoid tree contact. If the tree does represent a danger, it should be removed or the work activity should be excluded from within the potential failure zone.

General guidelines for danger tree indicators

Failure Indicator	Failure Potential (FP)		
	Imminent	Likely	Low
Old dead trees >5 years	All species except cedar or larch	Cedar or larch	None
Recent dead trees < 5 yrs	None if no other indicators are present	All species except cedar or larch	Cedar or larch
Recent dead trees in root disease pockets	Trees in laminated root rot or annosus root disease pockets	Trees in other root disease pockets	Cedar
Live trees in root disease pockets	Trees with fading crowns and adjacent to live windthrown trees with root decay	Healthy appearing trees with adjacent windthrown live-infected trees of the same species; trees with fading crowns with no windthrown trees present	Trees with fading crowns and black stain root disease
Butt rot	Trees with ≥1 basal conks and extensive decay	Trees with ≥1 basal conks and moderate decay	None
Bole wounds, mistletoe cankers, or fungal cankers	True fir, hemlock, spruce, or hardwoods with < 50% cross- section of bole with sound wood; pine, cedar, larch, or Doug-fir with <25% cross-section of bole with sound wood	True fir, hemlock, spruce or hardwoods with 50-75% cross- section of bole with sound wood; pine, cedar, larch, or Doug-fir with 25 to 50% cross-section of bole with sound wood	True fir, hemlock, spruce or hardwoods with >75% cross- section of bole with sound wood; pine, cedar, larch, or Doug-fir with >50% cross-section of bole with sound wood
Leaning and/or root-sprung trees	Trees with recent (<5yr) lean (>15°) or old uncorrected lean with cracked or mounded soil or root damage	Trees with recent lean or old uncorrected lean without cracked or mounded soil or root damage	Trees with old corrected lean
Undermined or severed root systems	Trees with <50% of structural roots remaining in the ground	Trees with 50-75% of structural roots remaining in the ground	Trees with >75% of structural roots remaining in the ground
Fire-damaged trees	Boles with <50% cross-section with sound wood or more than 1 quadrant (1/4of the circumference)of damaged structural roots.	Boles with 50-75% cross-section with sound wood or one quadrant of damaged structural roots except cedar, larch, ponderosa pine, or sugar pine which are low FP	Cedar, larch, ponderosa pine, or sugar pine with>50% cross-section of bole with sound wood; other species with>75% cross-section of bole with sound wood
Dead tops or dead large branches (>5 in. dia.)	True fir, hemlock or hardwoods with significant decay (bark absent or conks), top or branch is imminent FP, not the whole tree	True fir, hemlock or hardwoods with little or no decay; Doug-fir, spruce, or pine tops not rust-killed, with significant decay.	Cedar, larch, or rust-killed tops on pine
Dwarf-mistletoe brooms	None	Trees with dead brooms ≥10 ft in diameter (broom is likely FP, not the whole tree)	Trees with live brooms; dead brooms <10 ft in diameter
Bole conks	See area tables in Appendix B, tables 5 - 8	Trees with ≥1 conks except larch or cedar	Larch or cedar with ≥1 conks
Black cottonwood branches	None	Live, large branches on mature trees if previous breakage is apparent	Live, large branches without previous breakage in the tree
Forked or multiple tops	None	Tops with embedded bark, cracks, conks, or decay (top is likely FP, not the whole tree)	Tops without embedded bark, cracks, conks, or decay; U-shaped tops
Frost cracks	None	Trees with weeping, gaping cracks or are associated with ≥1 conks	Trees with tight cracks and no conks
Bole damage or cracks	Trees with bole cracks showing movement and decay	Trees with bole cracks without movement or decay	Trees with tight cracks, not open
Detached tops, limbs, or loose bark	All species (parts are imminent FP, not the whole tree)	None	None
Broken or uprooted trees supported by other trees	Trees or parts that are not held securely	Trees or parts that are held securely	None
Height-diameter ratio (H:D)	Trees with >100 H:D	Trees with 80-100 H:D	Trees with <80 H:D
Balsam woolly adelgid	None	Infested subalpine fir with ≤10% live crown	Infested subalpine fir with >10% live crown
Multiple indicators	Two or more likely FP indicators that combine to increase FP to imminent (i.e. live spruce with recent lean without soil damage but bole conks are present)	Two or more low FP indicators that combine to increase FP to likely (i.e. live but fire-damaged fir with 85% cross-section of bole with sound wood but with an old corrected lean)	Two or more low FP indicators that do not combine to increase FP to likely (i.e. pine with 85% of structural roots remaining and live mistletoe branches)