United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Grants Pass Resource Area
2164 N.E. Spalding
Grants Pass, Oregon 97526

IN REPLY REFER TO

1792 (ORM070)
DOI-BLM-OR-M070-2012-0003 EA

MAY 02 2013

Dear Interested Party:

The Environmental Assessment (EA) (#DOI-BLM-OR-M070-2012-0003 EA) for the Jumping Bean Ecological Forestry Project is available for comment and review starting May 7, 2013. This EA discloses the environmental effects of the Proposed Action (Alternative 2) and No Action Alternative (Alternative 1).

The project is an assigned as Western Oregon Ecological Forestry Project, as announced by Secretary of Interior, Ken Salazar. The Jumping Bean Ecological Forestry Project is designed to meet BLM's obligation to implement the Medford District Resource Management Plan (RMP) and to address the primary needs identified for lands in the Planning Area. The project's primary objective is to implement forest management activities that would restore ecological systems of forests in southwest Oregon, reduce wildfire danger, and contribute to continuous timber production. The Oregon and California Railroad Revested Lands Act (O&C Act) requires the Secretary of the Interior to manage O&C lands for permanent forest production. The Jumping Bean Ecological Forestry Project is largely within O&C lands.

Treatment goals are aimed to restore forest resiliency, species composition, and structural heterogeneity of dry forest ecosystems which is characteristic of late-successional forests, and the natural mosaic composition of southern Oregon forests where fire is a natural process of the landscape. The Jumping Bean Ecological Forestry Project is a dry forest restoration management project that would generally retain trees older than 150 years including legacy trees, oaks, and hardwoods.

To meet this objective, the Proposed Action for the project encompasses:

- 1,201 acres of Hazardous Fuel Reduction
- 637 acres of Density Management/ Hazardous Fuel Reduction
- 488 acres of Variable Density Thinning

Proposed road work to access timber extraction units includes the following:

- 1.2 miles of temporary route construction (to be decommissioned after use)
- 0.27 miles of temporary route re-construction (to be decommissioned after use)
- 0.1 miles of existing route re-construction
- 79 miles of road maintenance

The Jumping Bean Ecological Forestry Project Planning Area (PA) lies north of the city of Grants Pass, Oregon (Figure 1, EA p. 8)). The legal description of the PA is T34S-R6W-Sections 12, 13, 23-27, 33-36; T34S-R5W-Sections 7, 11-15, 18-36; T34S-R4W-18, 19, 30, 31; T35S-R6W-Sections 1-5, 8-17, 21-28, 34-36; T35S-R5W-Sections 1-12, 14-36; and T36S-R6W-Sections 1-3; and T36S-R5W-Sections 1-4, 9-12, 14-16, and 21-22 in Josephine County, Oregon, Willamette Meridian.

The purpose of this letter is to encourage public participation during the official comment period. You may access the Jumping Bean Ecological Forestry Project Environmental Assessment on the Medford District's internet site at http://www.blm.gov/or/districts/medford/plans/index.php. Hard copies of the EA are also available at the Grants Pass Interagency Office, 2164 NE Spalding Avenue, 97526. Office hours are Monday through Friday, 8:00 A.M. to 4:30 P.M., closed on holidays. A Reader's Guide for the EA will also be made available. If you have any questions about this project, please contact Leah Schofield, Planning and Environmental Coordinator, at (541) 471-6504.

Written comments are requested to be submitted in writing to Grants Pass Field Manager, and received within 30 days after the publication of legal notice in the Daily Courier. Comments received will be considered in making the final decision.

Comments submitted will become part of the public record for this project. Individual respondents may request confidentiality. If you wish to withhold your personal information from public review or from disclosure under the Freedom of Information Act, you must state this prominently at the beginning of your written comment. Such requests will be honored by the extent allowed by law. All submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, will be made available for public inspection on their entirety.

Thank you for your interest in public land management in the Grants Pass Resource Area.

Sincerely,

Allen Bollschweiler
Field Manager
Grants Pass Resource Area

ENVIRONMENTAL ASSESSMENT
for the

JUMPING BEAN ECOLOGICAL FORESTRY PROJECT

DOI-BLM-OR-M070-2012-0003-EA

U.S. DEPARTMENT OF INTERIOR
BUREAU OF LAND MANAGEMENT
MEDFORD DISTRICT
GRANTS PASS RESOURCE AREA

May 2013

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Chapter 1.0 - Purpose and Need for Action

1.1 Introduction

This Environmental Assessment (EA) will analyze the impacts of proposed forest management activities on the human environment in the Jumping Bean Ecological Forestry Project Planning Area (PA). The Project Planning Area encompasses the 5th Field Jumpoff Creek Watershed as well as two 7th Field Watersheds on the North and South ends which includes a total of approximately 56,109 acres of which the BLM manages approximately 20,526 acres.

This Planning Area boundary area is used as it is the scale at which potential impacts for the affected resources would be most likely to be detectable based on recent projects of this scale and scope (see Figure 1). The "Activity Area" refers to the collective units and road work proposed for the Jumping Bean Ecological Forestry Project (see Figure 2 and 3).

The EA will provide the decision maker, the Grants Pass 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 Medford District's Resource Management Plan (RMP, 1995) or whether effects would otherwise rise to the level of significance.

Chapter 1 discloses to the reader:

- what the BLM proposes to do (Proposed Action),
- the location and description of the Planning Area,
- why the BLM is proposing these forest management activities (Purpose and Need),
- what factors the decision maker will use for choosing a course of action that will best meet the purpose and need for this proposal,
- how the public has been involved in this project,
- the method for developing alternatives, and
- what the decision maker will decide upon.

The analysis utilizes field data, ground verification by resource specialists and Geographical Information System (GIS) technology to estimate acres, road miles and produce reference maps. Estimates are intended to aid the reader in understanding the proposed actions. The reader should be aware that electronic technology can produce information that appears precise but is still dependent on further field work. During implementation, unit boundaries are posted and surveyed and unforeseen features, such as water sources, are appropriately buffered. It has been the experience for past Grants Pass Resource Area Environmental Assessments that estimates of treatment acres in the EA have been generally greater than the actual acres treated on the ground.

1.2 Proposed Action

Background
The project is an assigned Western Oregon Ecological Forestry Project, as announced by Secretary of Interior, Ken Salazar. This Ecological Forestry Project has been designed to be consistent with the Medford District RMP and in line (or "consistent with") with the ecological forestry work of Oregon and Washington professors Dr. Norm Johnson and Dr. Jerry Franklin. This effort included consideration of Late Successional Emphasis Areas (LSEAs). LSEAs are an important component of Franklin and Johnson's "Dry Forest Restoration Principles" which retain denser forest patches needed to provide important habitat for many organisms, such as the Northern Spotted Owl (NSO) and some of its prey species. However, LSEAs are not reserves and do not remove lands from the Matrix land allocation, the land allocated for timber production in the Medford District RMP (RMP pp. 38-40). For this project, the BLM interdisciplinary team applied LSEAs as a planning tool to identify high value habitat areas in the BLM portion of the Planning Area as part of a landscape level plan. Treatment objectives include reducing the risk of wildfire loss of this high value habitat and identifying thinning treatments within LSEAs that would maintain or promote the development of late successional conditions. LSEAs are used as planning tools applicable to individual projects, but are not Land Use Allocations as defined by the 1994 Northwest Forest Plan and 1995 Medford District Resource Management Plan.

Proposed Action Summary
The following is a summary of BLM's proposal for the Jumping Bean Ecological Forestry Project. A more detailed description of the Proposed Action is included in Chapter 2. The Proposed Action includes forest management activities on approximately 2,326 acres of forest land. Of these acres, the following is proposed: 1,201 acres of Hazardous Fuel Reduction, 488 acres of Variable Density Thinning, and 637 acres of Density Management/Hazardous Fuel Reduction (see Chapter 2 below for definitions of these treatments). Trees to be removed for commercial harvest would be yarded with the use of tractors or skyline cable. Commercially extracted trees would be whole-tree yarded or yarded with attached tops where appropriate, to minimize impacts. Slash would be treated using one or more of the following actions: lop & scatter, pile & burn, chipping, or biomass utilization.

Objective
Treatment goals are aimed to restore forest resiliency, characteristic species composition, and structural heterogeneity of dry forest ecosystems which is characteristic of late-successional forests, and the natural mosaic composition of southern Oregon forests where fire is a natural process of the landscape. The Jumping Bean Ecological Forestry Project is a dry forest restoration management project that would generally retain trees older than 150 years including legacy trees, oaks, and hardwoods.

The majority of the proposed treatment units are within lands governed by the Oregon and California Railroad and Coos Bay Wagon Road Grant Lands Act (O&C Act). The

total acreage of Public Domain Lands[1] within proposed units is 639 acres. Harvesting and associated forest management activities are planned to start in 2013. BLM planning decisions and harvest activities would apply only to BLM-administered O&C and Public Domain lands.

1.3 Project Location

The Planning Area (PA) lies north of the city of Grants Pass, Oregon (see Figure 1 below). Table 1 lists the watersheds and sub-watersheds in the Jumping Bean Ecological Forestry Project Planning Area.

The Jumping Bean Ecological Forestry Project Planning Area totals 56,109 acres, of which the BLM manages approximately 20,526 acres, forming a "checkerboard" pattern of public and private ownerships. Approximately 35,246 acres of the PA is privately owned, 295 acres are managed by local government, and 41 acres are managed by Oregon State Department of Forestry lands.

Under the Medford District 1995 RMP, proposed activities are scheduled to occur in Matrix and Riparian Reserve land use allocations.

Watersheds

Table 1: Jumping Bean Ecological Forestry Project Planning Area Watersheds

Sub-watersheds (HUC 6s)	Watershed (HUC 5s)
Upper Jump Off Joe Creek	Jump Off Joe Creek
Middle Jump Off Joe Creek	
Savage Creek	
Louse Creek	
Shanks Creek	Grave Creek
Savage Creek	Grants Pass - Rogue River

HUC = Hydrologic Unit Code sixth field and fifth field

The legal description of the PA is T34S-R6W-Sections 12, 13, 23-27, 33-36; T34S-R5W-Sections 7, 11-15, 18-36; T34S-R4W-18, 19, 30, 31; T35S-R6W-Sections 1-5, 8-17, 21-28, 34-36; T35S-R5W-Sections 1-12, 14-36; and T36S-R6W-Sections 1-3; and T36S-R5W-Sections 1-4, 9-12, 14-16, and 21-22 in Josephine and Jackson Counties, Oregon, Willamette Meridian.

[1] Public Domain Lands are original holdings of the United States never granted or conveyed to other jurisdictions, or reacquired by exchange for other public domain lands (RMP, p.111). Public Domain lands are guided by the Federal Land Policy and Management Act of 1976 and the principles of multiple use and sustained timber yield.

Jumping Bean Project Environmental Assessment Map

R6W R5W R4W

T33S

T34S

T35S

T36S

Saint Paul Mountain
Sexton Mountain
Roberts Mountain
Red Mountain
Walker Mountain
Elk Mountain
Old Baldy
Dollar Mountain
Beacon Hill
Fielder Mountain
Bald Mountain
Grants Pass

OREGON
Project Area
Grants Pass
Medford

No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources and may be updated without notification.

Temporary Route Construction
Temporary Route Re-construction
Roads
Density Management / Hazardous Fuels Reduction
Hazardous Fuels Reduction
Variable Density Thinning (Dry Douglas-fir)
Project Boundary
Late Successsional Emphasize Areas
HUC 6 Boundary
Bureau of Land Management
U.S. Forest Service
State
Private/Unknown

0 0.5 1 2 3 4 Miles

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Prepared By: R.Snider
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1.4 Purpose and Need for the Proposal

The Jumping Bean Ecological Forestry Project is designed to meet BLM's obligation to implement the 1995 Resource Management Plan and to address the primary needs identified for lands in the Project Planning Area. The project's **purpose and need** is to implement forest management activities that would restore ecological systems of forests in southwest Oregon, reduce wildfire danger, and contribute to continuous timber production. This project would retain trees generally older than 150 years including legacy trees, oaks, and hardwoods.

The Oregon and California Railroad Revested Lands (O&C Act) requires the Secretary of the Interior to manage O&C lands for permanent forest production. The Jumping Bean Ecological Forestry Project is largely on O&C lands.

The Proposed Action and consideration of any action alternative would be designed to meet the following objectives in the Planning Area:

- Utilize ecological forestry principles and plant communities to restore characteristic structure and composition, ecological conditions, and ecosystem functions.
- Reduce stand density to increase long term tree growth, quality, and vigor of the remaining trees and increase resistance of the landscape to fire, drought, and insects.
- Create diversified stand structure (height, age, and diameter classes) to enhance structural complexity and composition which is the result of variability.
- Produce a sustainable supply of timber and other forest commodities to provide jobs and contribute to community stability.
- Reduce both natural and activity based fuel hazards through various methods.
- Ensure project activities are consistent with existing right-of-way agreements.

1.5 Plan Consistency

The Jumping Bean Ecological Forestry Project is designed to be consistent with the following:

- Final Supplemental Environmental Impact Statement and Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl (Northwest Forest Plan FSEIS, 1994 and ROD, 1994) as amended
- Final-Medford District Proposed Resource Management Plan/Environmental Impact Statement and Record of Decision (EIS, 1994 and RMP/ROD, 1995)
- Final Supplemental Environmental Impact Statement: Management of Port-Orford-Cedar in Southwest Oregon (FSEIS, 2004 and ROD, 2004)
- Medford District Integrated Weed Management Plan Environmental Assessment (1998) and tiered to the Northwest Area Noxious Weed Control Program (EIS, 1985)

The Jumping Bean Ecological Forestry Project is consistent with court orders relating to the 2011 Settlement Agreement in Litigation over the Survey and Manage Mitigation Measure in *Conservation Northwest et al. v. Sherman et al.*, Case No. 08-1067-JCC (W.D. Wash.) that went into effect on July 21, 2011.

Other Relevant Planning Documents

Recovery Action 32

In June 2011, the USFWS (U.S. Fish and Wildlife Service) finalized the *Revised Recovery Plan for the Northern Spotted Owl*, which contains 33 Recovery Actions. Recovery Actions are recommendations to guide activities needed to accomplish the recovery objectives and ultimately lead to delisting of the species. Specifically, Recovery Action 32 (RA 32) in the Recovery Plan recommends "maintaining and restoring the older and more structurally complex multilayered conifer forests" (U.S. Fish and Wildlife Service 2011, III-67). The intent of RA 32 is to maintain substantially all of the older and more structurally complex multi-layered conifer forests on federal lands in order not to further exacerbate the competitive interactions between spotted owls and barred owls. The Jumping Bean Ecological Forestry Project defers proposed treatment in RA 32 stands identified by interagency survey guidance (USDA/USDI 2010) and is consistent with consultation completed with the U.S. Fish and Wildlife Service (USFWS), (USFWS 2011b and USFWS 2012b).

Watershed Analysis

The *Jumpoff Joe Creek Watershed Analysis (1998)*, the *Grave Creek Watershed Analysis (1999), and Grants Pass – Rogue River (1998) Watershed Analysis* are incorporated by reference. Watershed analysis is a procedure used to characterize conditions, processes, and function related to human, aquatic, riparian and terrestrial features within a watershed. Watershed Analysis is not a decision making process. Rather, Watershed Analyses provides information and non-binding recommendations for agencies to establish the context for subsequent planning, project development, regulatory compliance and agency decisions.

Water Quality Restoration Plans

Water Quality Restoration Plans (WQRP) has also been completed for each of these watersheds. These documents can be reviewed on the Medford District BLM website at http://www.blm.gov/or/districts/medford/plans/inventas.php and http://www.blm.gov/or/districts/medford/plans/activityplans.php, respectively. WQRP's covering this Planning Area are; Grave Creek WQRP, Jumpoff Joe Creek Watershed WQRP, and Grants Pass-Rogue River Watershed WQRP.

The Medford RMP identified 12 watersheds (termed Deferred Watersheds) covering approximately 49,636 acres within the Medford District Office as adverse effects from past management activities including timber harvest and other surface disturbing activities. These watersheds were deferred from future surface disturbing activities for a minimum of ten years, with limited management activities such as riparian, fish and wildlife enhancement, or salvage and restoration being permitted only if cumulative effects to the watershed were not increased as a result.

Watershed Deferral Background
Portions of this Planning Area are located within two of these watersheds that were deferred in 1995; the Upper Louse Creek and Upper Jumpoff Joe Creek Deferred Watersheds. Since that time, restoration treatments were implemented that were designed to reduce erosion, sediment, and cumulative impacts within these watersheds (Joe-Louse EA, 2006). Following these treatments, these watersheds were re-analyzed in the Joe-Louse Watershed Deferral Status Report (July, 2007), and are consistent with IM # OR110-2006-024 they were subsequently removed from deferral status. Treatments proposed in this project are designed to be consistent with the special management practices that were recommended within the Joe-Louse Watershed Deferral Status Report.

Aquatic Conservation Strategy
The Aquatic Conservation Strategy (ACS) consistency analysis (see Appendix 5) evaluated the Proposed Action and found the project would not retard or prevent the attainment of the nine objectives or the four components of the ACS. Therefore, this project is consistent with the ACS of the NWFP ROD (1994).

U.S. Department of Interior, Bureau of Land Management, Western Oregon Districts, Transportation Management Plan (1996, updated 2010).

This transportation management plan is not a decision document; rather, it provides guidance for implementing applicable decisions of the 1995 Medford District Resource Management Plan (which incorporated the Northwest Forest Plan).

1.6 Public Scoping

Public involvement included release of two scoping letters for the Jumping Bean Ecological Forestry Project (February 2012 and August 2012) and a public field trip (October 2012). The February 2012 scoping letter was released prior to the project being assigned as an Ecological Forestry Project. Following the Secretary of Interior's direction, the project evolved to incorporate Ecological Forestry principles, which prompted the August 2012 scoping period.

The scoping letters were mailed to a list of individuals, agencies, and organizations expressing interest in Grants Pass Resource Area projects and landowners within ¼ mile of the Jumping Bean Ecological Forestry Project proposed units. Scoping comments were requested within 30 days for each of these letters so comments received could be considered for further development of the project. The BLM received public responses in the form of letters, emails, and phone calls during scoping. All substantive scoping comments are responded to in Appendix 2 of this EA. Scoping comments were considered in the development of the project.

The BLM also conducted two field trips with Dr. Norm Johnson and Dr. Jerry Franklin in April and September 2012 to review sample marking and to ensure the project would meet the principles of their ecological forestry work.

The Grants Pass Resource Area also accepts public comment of proposed forest management activities through the quarterly BLM Medford Messenger publication. A brief description of proposed projects, such as the Jumping Bean Ecological Forestry Project, a legal location and general vicinity map are provided along with a comment sheet for public responses. The Jumping Bean Ecological Forestry IVM Project has been included in these quarterly publications beginning in the winter of 2011/2012.

Issues identified during scoping with the Proposed Action were considered to determine if an alternative action would be developed. Through the scoping process, the public provided comments that were considered by the interdisciplinary team and incorporated into alternative development.

1.7 Alternatives Considered but Eliminated from Further Analysis

The following addresses the public's comments on Alternative Development for the Jumping Bean Ecological Forestry Project. All substantive public comments received on the project and BLM responses can be found in Appendix 2 of this EA.

The following is a summary of alternative action requests made in public comments for this project during scoping:

Forest Management and Stand Health

- retain trees >21 inches dbh and trees > 100 years of age
- requests road density reduction, noxious weed abatement, and riparian restoration be applied for restoring forest health as a part of this project.
- requests snag creation activities

Riparian

- non-commercial thin Riparian Reserves instead of allowing extraction

Access

- decommission roads to reduce road density
- do not construct any temporary roads (routes)

Northern Spotted Owl Habitat

- retain large diameter trees
- make LSEAs large enough to avoid "take"

Economics

- winter harvesting and haul to keep employment going during these months
- fuels treatments be less prescriptive and more objective-based
- economic analysis – cost/benefit, viability
- apply regeneration harvest rather than thinning to meet the Northwest Forest Plan and Medford District RMP

Public requests that were within the purpose and need for this project where evaluated for project modification. The environmental effects of taking no action are analyzed in the Jumping Bean Ecological Forestry Project Environmental Assessment. Requests to not

logging older stands and trees, and to not construct temporary routes are considered under the No Action Alternative.

The BLM interdisciplinary team (IDT) for this project considered whether there would be a substantial difference between the Proposed Action (Alternative 2) and another Action Alternative with Regeneration Harvest applied as part of the proposal. The IDT found that the difference in volume would be 25% more if regeneration harvest was applied to this project. Approximately 2% of the prescriptions would change from Variable Density Thinning (VDT) to Regeneration Harvest. This area is managed under the Southern General Forest Management Area (SGFMA) of Matrix lands of the Northwest Forest Plan which provides 16-25 trees per acre greater than 20 inches to be retained. Since this would be a minimal change from the Proposed Action, this alternative was not be considered for further development. Sixty-percent of the BLM ownership in the Jumping Bean Ecological Forestry Project is in critical habitat for the northern spotted owl, which are specific areas within the geographic area occupied by a species…on which are found those physical or biological features essential to the conservation of the species…" (USFWS 2012).

1.8 Decisions to be Made

This Environmental Assessment will provide the information needed for the responsible official, Grants Pass Resource Area Field Manager, to select a course of action for this project. The Grants Pass Resource Area Field Manager must decide to whether to implement action based on the action alternative, select the No-Action alternative, or choose a combination of components found within the alternatives analyzed.

The decision will also include a determination whether or not the impacts of the actions are significant to the human environment. If the impacts are determined to be within the range analyzed in the Medford District Resource Management Plan Environmental Impact Statement (EIS) (USDI 1994) and the Northwest Forest Plan Supplemental Final EIS (USDA and USDI 1994), or otherwise determined to be insignificant, a Finding of No Significant Impact (FONSI) can be issued and the decision implemented. If the responsible official determines that the significance of impacts are unknown or greater than those previously analyzed and disclosed in the RMP/EIS and the Northwest Forest Plan, then a project specific EIS must be prepared.

A decision record will be prepared after the official EA comment period. The decision record will document the actions authorized by the Responsible Official (the Grants Pass Resource Area Field Manager) along with the rationale for selecting a course of action. The selected course of action will be based on the how well the alternatives meet the purpose and need for action and effects documented in the EA.

Chapter 2.0 - Proposed Action and Alternatives

2.1 Introduction

This chapter describes and compares Alternative 1 (No Action Alternative) and Alternative 2 (Proposed Action) as specified in 40 CFR (Code of Federal Regulations) § 1502.14. Descriptions summarize potential environmental consequences and focus on potential actions, outcomes and outputs. Best Management Practices (BMPs) and Project Design Features (PDFs) for this project are included in Section 2.3.2. The BMPs are methods, measures, or practices selected from the 1995 ROD/ RMP to ensure that water quality would be maintained. PDFs are specific mitigation measures included in the site specific design of the Proposed Action to eliminate or minimize adverse impacts on the human environment. Theses PDFs were developed by the Jumping Bean Ecological Forestry Project interdisciplinary team with guidance of the 1995 ROD/RMP and resource protection measures specific to the Project Planning Area.

The BLM applies an interdisciplinary approach during the NEPA process to insure the integrated use of the natural, environmental, and social sciences are applied to the project's development and analysis. The project interdisciplinary team developed the Proposed Action to meet the purpose and need identified in Chapter 1. The Proposed Action was developed based on existing environmental conditions and also reflects public participation in the planning process.

In addition, a No Action Alternative is analyzed to represent current conditions and trends, and establish a baseline for analysis of project effects.

2.2 Description of the Alternatives

2.2.1 Alternative 1 (No Action)

The No Action Alternative provides a baseline for the comparison of the Proposed Action and describes the existing condition and the continuing trends within the Planning Area. Under the RMP, proposed activities are scheduled to occur in the Matrix and Riparian Reserve land use allocations. The No Action Alternative would not meet the purpose and need of the project (described in Chapter 1) to restore ecological systems of forests in southwest Oregon, reduce wildfire danger, and contribute to continuous timber production.

Future harvesting and treatments in this area would not be precluded and could be analyzed under a subsequent environmental analysis. Road maintenance would be dependent on funding and reciprocal right-of-way agreements.

There are four ongoing foreseeable federal projects in the Jumping Bean Ecological Forestry Project Planning Area: the Fuel Hazard Reduction associated with the Grants Pass Resource Area 2010-2015 EA, the Shorthorn Gulch Land Parcel Sale, the Birdseye Jones Timber Sale, and potential silvicultural treatments through year 2018 on 311 acres.

2.2.2 Alternative 2 (Proposed Action)

The Jumping Bean Ecological Forestry Project is designed to meet BLM's obligation to implement the RMP and to address the primary needs identified for lands in the Planning Area. The project's primary objective is to implement forest management activities that would restore ecological systems of forests in southwest Oregon, reduce wildfire danger, and contribute to continuous timber production. The RMP directs the BLM to implement the Oregon and California Railroad Revested Lands (O&C Act) which requires the Secretary of the Interior to manage O&C lands for permanent forest production.

Areas identified as structurally complex habitat as defined by Recovery Action 32 in the 2011 Final Northern Spotted Owl Recovery Plan are deferred from any treatment within the project area.

Forest Management Treatments

The Proposed Action would treat 1,201 acres of Hazardous Fuel Reduction, 488 acres of Variable Density Thinning, and 637 acres of Density Management/Hazardous Fuel Reduction (see below for definitions of these treatments). Table 2 (below) provides a summary of treatments, Tables 2 and 3 provide more specific details regarding treatment units and road work.

Units proposed for Variable Density Thinning that may not be economical as a timber sale at the time of the Field Manager's decision would be treated by Density Management and/or Hazardous Fuel Reduction treatments. The decision issued by the Field Manager would clarify if any units convert from commercial harvest to Density Management and /or Hazardous Fuel Reduction. Some of the vegetation treatments may produce woody biomass and/or special forest products that could be removed under stewardship and/or service contracts.

Timber Yarding

Harvest yarding systems for the Proposed Action include the use of skyline cable and tractor yarding. Trees to be removed for commercial harvest would be whole-tree yarded or yarded with the tops attached to minimize impacts. See Table 2, Alternative 2 for individual unit harvesting methods proposed.

Road Work

Proposed road work associated with commercial timber harvesting for the Proposed Action includes 1.2 miles of temporary route construction and 0.27 miles of temporary route re-construction to access proposed timber treatment units consistent with existing right-of-way agreements. These temporary routes would be decommissioned after use. All existing permanent roads used for hauling timber would be maintained.

All haul routes for the Jumping Bean Ecological Forestry Project would be limited to dry condition haul. Meaning, hauling would not occur during wet road conditions, which are considered to result in continuous mud splash or tire slide, fines being pumped through

road surfacing from the subgrade, road drainage causing a visible increase in stream turbidities, surface rutting, or any condition that would result in being chronically routed into tire tracks or away from designed road drainage during precipitation events. BST roads could be used for all seasons as the surface of these roads are sealed, however; access to these roads requires travel on roads limited to dry condition haul.

Activity Fuels Treatments

Trees to be removed for commercial harvest would be whole-tree yarded or yarded with tops attached to minimize activity slash remaining within the harvest units. It is anticipated the majority of the activity slash would be extracted from each thinning unit by this process and piled at the landing sites. In areas utilizing ground based logging equipment, processing of tops in skid trails and the resulting slash being driven over may occur. Merchantable sawlogs would be removed from yarded material, and any remaining debris at the landing sites would be machine and/or hand piled and burned at approved locations, chipped, or removed for biomass utilization.

Activity slash within units may be machine or hand pile/burned, chipped, or lopped and scattered based on a post-logging assessment of fuel loading.

The purpose of a lop-and-scatter treatment is to break up jackpots of material so that the slash does not increase the fire hazard. The lop portion of “lop-and-scatter” would cut slash so it would not exceed 18 inches in height from the ground and material less than 6 inches in diameter would be cut into pieces so it would not exceed 8 foot in length. Scattering would arrange slash in a discontinuous pattern across the forest floor.

If the amount of slash remaining in units results in too high a fuel load because there are no open spaces to scatter the slash, chipping or machine/hand pile and burn may be recommended for treatment. This determination would be made by the Authorized Officer as recommended by the Fuels Specialist.

Hazardous Fuel Reduction

Hazardous Fuel Reduction would be implemented on approximately 1,201 additional acres in 40 units where existing vegetation and fuel loading pose a wildfire hazard. Though Hazardous Fuel Reduction is not a commercial treatment on its own, it may also be implemented in conjunction with other proposed treatments for this project such as Density Management and Variable Density Thinning treatment units to reduce fuel loading. Private residences within 1.5 miles of federal land may be classified as being within the Wildland Urban Interface (WUI) area as described by the National Fire Plan.

Unit boundaries may be altered during the layout process to facilitate logistically practical implementation; however, boundary adjustments would not exceed surveyed areas. Hazardous Fuel Reduction would not occur within 25 ft from the stream bankfull width (by slope distance) to protect stream channel structure and water quality.

Table 2: Proposed Action Summary

Action	Acres	Roads	Miles
Number of Units	84	Temporary Route Construction	1.2
Acres of HFR	1,201	Temporary Route Re-Construction	0.27
Acres of DM/HFR	637	Existing Route Re-construction	0.1
Acres of VDT (Douglas-fir series)	488	Existing Road Maintenance and Haul	78.9
Total Treatment Acres	2,326		
• Matrix 1125 acres • Riparian Reserves 72 acres			

Legend

HFR = Hazardous Fuel Reduction
DM = Density Management
VDT = Variable Density Thin

Table 3: Jumping Bean Ecological Forestry Project Units

Township Range Section	Unit #	Acres	Proposed Action – Alternative 2 Treatment	Harvest System	Ecological Protection Zone (EPZ) slope distance
T34S-R5W-13	13-3	31	HFR	-------	25 ft no treatment buffer
	13-12	36	DM/HFR	tractor/cable	100 ft
T34S-R5W-14	14-1	55	DM/HFR	tractor	125 ft
	14-2	33	DM/HFR	cable	110-125 ft
	14-3	27	HFR	-------	25 ft no treatment buffer
	14-4	9	DM/HFR	tractor	no streams present
	14-5	42	HFR	-------	25 ft no treatment buffer
	14-7	16	HFR	-------	
	14-8	41	HFR	-------	
	14-8A	11	HFR	-------	
	14-9	16	HFR	-------	
	14-10	21	HFR	-------	
T34S-R5W-15	15-11	49	DM/HFR	cable	125 ft

Legend

HFR = Hazardous Fuel Reduction DM = Density Management
VDT = Variable Density Thin RR = Riparian Reserve

Township Range Section	Unit #	Acres	Proposed Action – Alternative 2 Treatment	Harvest System	Ecological Protection Zone (EPZ) slope distance
T34S-R5W-15	15-24A	10	HFR	-------	25 ft no treatment buffer
	15-24B	13	HFR	-------	
T34S-R5W-19	19-11	14	VDT	tractor	100 ft
T34S-R5W-20	20-1	9	HFR	-------	25 ft no treatment buffer
	20-2	16	VDT	cable	no streams present
	20-10	11	HFR	-------	25 ft no treatment buffer
	20-10A	17	HFR	-------	
	20-13	7	VDT	cable	100-125 ft
T34S-R5W-21	21-3	38	DM/HFR	tractor/cable	75-125 ft
	21N-1	28	DM/HFR	tractor/cable	no commercial RR entry
	21N-1A	3	HFR	-------	25 ft no treatment buffer
	21N-2	83	HFR	-------	
	21S-1	17	HFR	-------	
T34S-R5W-23	23-1	55	DM/HFR	cable	no commercial RR entry
	23-9	11	DM/HFR	tractor	no streams present
	23-10	21	HFR	-------	25 ft no treatment buffer
	23-11	16	HFR	-------	
T34S-R5W-28	28-17	23	DM/HFR	tractor	100-180 ft
T34S-R5W-29	29-11	14	VDT	tractor/cable	75-180 ft
T34S-R5W-30	30-4	20	VDT	tractor	no commercial RR entry
T34S-R5W-31	31-1A	16	VDT	cable	125-180 ft
	31-1B	37	VDT	cable	125-180 ft
T34S-R5W-33	33-1	32	HFR	-------	25 ft no treatment buffer
	33-14	15	HFR	-------	
	33-15	19	HFR	-------	
	33N-11	27	HFR	-------	

Legend

HFR = Hazardous Fuel Reduction DM = Density Management
VDT = Variable Density Thin RR = Riparian Reserve

Township Range Section	Unit #	Acres	Proposed Action – Alternative 2 Treatment	Harvest System	Ecological Protection Zone (EPZ) slope distance
T35S-R6W-1	1-2	39	VDT	tractor/cable	no commercial RR entry
	1-2A	18	HFR	-------	25 ft no treatment buffer
	1-2B	5	HFR	-------	
T35S-R5W-4	4-3	5	VDT	tractor	no streams present
	4-4	17	VDT	tractor	125 ft
T35S-R5W-8	8-2	27	VDT	tractor	125- 180 ft
	8-3	47	HFR	-------	25 ft no treatment buffer
T35S-R5W-9	9-2	17	VDT	cable	no commercial RR entry
	9-14	11	VDT	tractor	100 ft
	9-15	14	VDT	tractor	75 ft
	9-16	24	VDT	cable	no streams present
T35S-R5W-15	15-6	41	DM/HFR	cable	no commercial RR entry
	15-13	8	VDT	cable	
	15-13A	3	DM/HFR	cable	
	15-13B	11	HFR	-------	25 ft no treatment buffer
	15-15	33	VDT	tractor/cable	no commercial RR entry
	15-15A	9	HFR	-------	25 ft no treatment buffer
	15-22	57	HFR	-------	
	15-24	55	DM/HFR	cable	no commercial RR entry
	15N-15	40	HFR	-------	25 ft no treatment buffer
T35S-R5W-17	17-4	27	VDT	tractor/cable	no streams present
	17-4A	13	HFR	-------	25 ft no treatment buffer

Legend

HFR = Hazardous Fuel Reduction DM = Density Management
VDT = Variable Density Thin RR = Riparian Reserve

Township Range Section	Unit #	Acres	Proposed Action – Alternative 2 Treatment	Harvest System	Ecological Protection Zone (EPZ) slope distance
T35S-R5W-21	21-10	9	VDT	cable	no commercial RR entry
	21-11	15	VDT	cable	
	21-12	48	DM/HFR	tractor/cable	75-150 ft
	21-13	28	VDT	tractor/cable	100-180 ft
	21-15	10	VDT	cable	
	21S-2	22	VDT	cable	no commercial RR entry
	21S-4	89	HFR	-------	25 ft no treatment buffer
T35S-R5W-22	22-1	10	DM/HFR	cable	125 ft
	22-3	80	DM/HFR	cable	125-180 ft
T35S-R5W-23	23-1A	41	HFR	-------	25 ft no treatment buffer
	23-4	15	VDT	tractor	no commercial RR entry
	23-4A	44	HFR	-------	25 ft no treatment buffer
T35S-R5W-25	25-7	42	HFR	-------	
	25-17	10	VDT	cable	no streams present
T35S-R5W-27	27-3	107	HFR	-------	25 ft no treatment buffer
	27-4	33	HFR	-------	
T35S-R5W-28	28-11	62	DM/HFR	tractor	100-180 ft
T35S-R5W-33	33-6	48	HFR	-------	25 ft no treatment buffer
	33-10	26	VDT	cable	no commercial RR entry
	33-10A	6	VDT	tractor/cable	no streams present
	33-10B	56	HFR	-------	25 ft no treatment buffer
	33S-11	19	HFR	-------	
	35-23	24	HFR	-------	

Legend

HFR = Hazardous Fuel Reduction DM = Density Management
VDT = Variable Density Thin RR = Riparian Reserve

Table 4: Proposed Road work

Road Work Activities	Road Number	Miles	Control	Surface	Hydro-logically Connected (yes or no)
Temporary route construction (Decommission after use: Block, sub-soil, waterbar, seed and mulch after use)	into Unit 17-4	0.06	BLM	NAT	No
	into Unit 31-1B	0.35	BLM	NAT	No
	into Unit 1-2	0.33	BLM	NAT	No
	into Unit 15-5A	0.12	BLM	NAT	No
	into Unit 25-17	0.05	BLM	NAT	No
	into Unit 9-2A	0.30	BLM	NAT	No
Temporary route re-construction (Decommission on federal lands aft.er use: Block, sub-soil, waterbar, seed, and mulch after use)	into Unit 17-4	0.19	BLM	NAT	No
	into Unit 9-14	0.08	BLM	NAT	Yes
Maintenance & Haul	34-5-29 C	0.67	BLM	ASC	Yes
	34-5-31 B	0.73	BLM	NAT	Yes
	34-6-13.1 C	2.58	BLM	NAT	No
	34-6-13.1 D	0.13	BLM	NAT	No
	34-6-13.1 B	0.41	BLM	NAT	Yes
	34-6-13.1 A	0.41	BLM	ASC	No
	34-6-12 C	0.44	BLM	ASC	No
	34-6-12 B	1.94	BLM	ASC	No
	34-6-12 A	0.67	BLM	ASC	No
	34-6-24	0.09	County	NAT	Yes
	34-5-29 B	0.79	BLM	ASC	Yes
	34-5-29 A	0.23	BLM	ASC	No
	34-5-32 A	0.67	BLM	BST	Yes
	35-5-8.1 B	1.34	BLM	NAT	Yes
	35-5-8.1 C	0.19	BLM	NAT	Yes
	35-5-6.1 B	0.69	BLM	NAT	No
	35-5-6.1 A	0.25	Not Known	NAT	Yes
	35-5-6.2	0.31	PVT	NAT	Yes

Legend

ASC = Aggregate Surface Course NAT = Natural or Native GRR = Grid Rolled Rock
BST = Bituminous Surface Treatment PVT = Private

Road Work Activities	Road Number	Miles	Control	Surface	Hydro-logically Connected (yes or no)
Maintenance & Haul	35-5-8.1 F	0.33	Not Known	NAT	Yes
	35-5-8.1 D	1.09	Not Known	NAT	Yes
	35-5-8.1 J	0.15	Not Known	NAT	Yes
	35-5-8.1 L	0.14	BLM	NAT	Yes
	35-5-8.1 M	0.06	Not Known	NAT	No
	35-5-8.1 N	0.07	BLM	NAT	No
	35-5-8.1 K	0.26	PVT	NAT	No
	35-5-8.1 H	0.02	PVT	NAT	No
	35-5-8.1 G	0.18	Not Known	NAT	No
	35-5-8.1 I	0.08	Not Known	NAT	No
	35-5-8.1 E	0.02	Not Known	NAT	No
	35-5-8.1 A	0.25	BLM	NAT	Yes
	35-5-9 A	0.60	BLM	NAT	Yes
	35-5-4.1	0.32	BLM	ASC	Yes
	35-5-9.1	0.55	BLM	ASC	Yes
	35-5-9.2 A	0.52	BLM	Non designated chipseal	Yes
	35-5-3.3	0.94	BLM	ASC	No
	35-5-9.2 B	0.17	BLM	NAT	Yes
	35-5-3.2	0.48	BLM	ASC	No
	35-5-4 F	0.71	BLM	ASC	Yes
	35-5-4 E	0.48	BLM	ASC	Yes
	35-5-4 B	0.20	BLM	ASC	Yes
	35-5-4 C	0.13	PVT	ASC	Yes
	35-5-4 D	0.27	BLM	ASC	No
	35-5-20.1	0.85	BLM	NAT	Yes
	35-5-20 C	0.45	BLM	NAT	No
	35-5-20 B	0.48	BLM	NAT	No
	35-5-20 A	0.49	BLM	NAT	No
	35-5-21.2	0.73	BLM	ASC	Yes

Legend

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Road Work Activities	Road Number	Miles	Control	Surface	Hydro-logically Connected (yes or no)
Maintenance & Haul	35-5-21.1 A	1.00	BLM	ASC	Yes
	35-5-26.1 A	1.70	BLM	ASC	Yes
	35-5-21 A	1.77	BLM	BST	Yes
	35-5-21.1 B	0.69	BLM	ASC	Yes
	35-5-22	0.67	BLM	ASC	Yes
	35-5-22.1	0.10	BLM	NAT	No
	35-5-21.1 C	0.52	BLM	ASC	No
	35-5-26.1 B	1.62	BLM	ASC	Yes
	35-5-26.2 A	1.94	BLM	ASC	Yes
	35-5-26 A	1.07	BLM	ASC	Yes
	35-5-26.2 B	0.92	BLM	ASC	Yes
	35-5-35 B	1.48	BLM	ASC	Yes
	35-5-35 A	0.05	BLM	ASC	Yes
	35-5-25.5	0.37	BLM	ASC	No
	Placer Rd	4.30	County	BST	No
	Sunny Valley Loop	0.44	County	BST	No
	Bleecher Rd	0.29	County	BST	No
	Jumpoff Joe Rd	3.78	County	BST	No
	Co33-319_18	0.12	County	BST	No
	Winona Rd	3.81	County	BST	No
	Granite Hill Rd	4.78	County	BST	No
	35-5-20.2	0.39	Not Known	NAT	Yes
	35-5-20.2	0.27	PVT	NAT	No
	35-5-18.0	0.83	County	NAT	No
	35-5-23.1	0.23	BLM	ASC	Yes
	34-5-21.6	0.26	Not Known	Unknown	No
	34-5-14.4	0.22	Not Known	Unknown	Yes
	Private Rd	0.47	PVT	NAT	No
	34-5-20 C2	1.02	BLM	NAT	Yes
	34-5-20 I	0.34	PVT	NAT	Yes
	34-5-20 D	0.45	PVT	NAT	No

Legend

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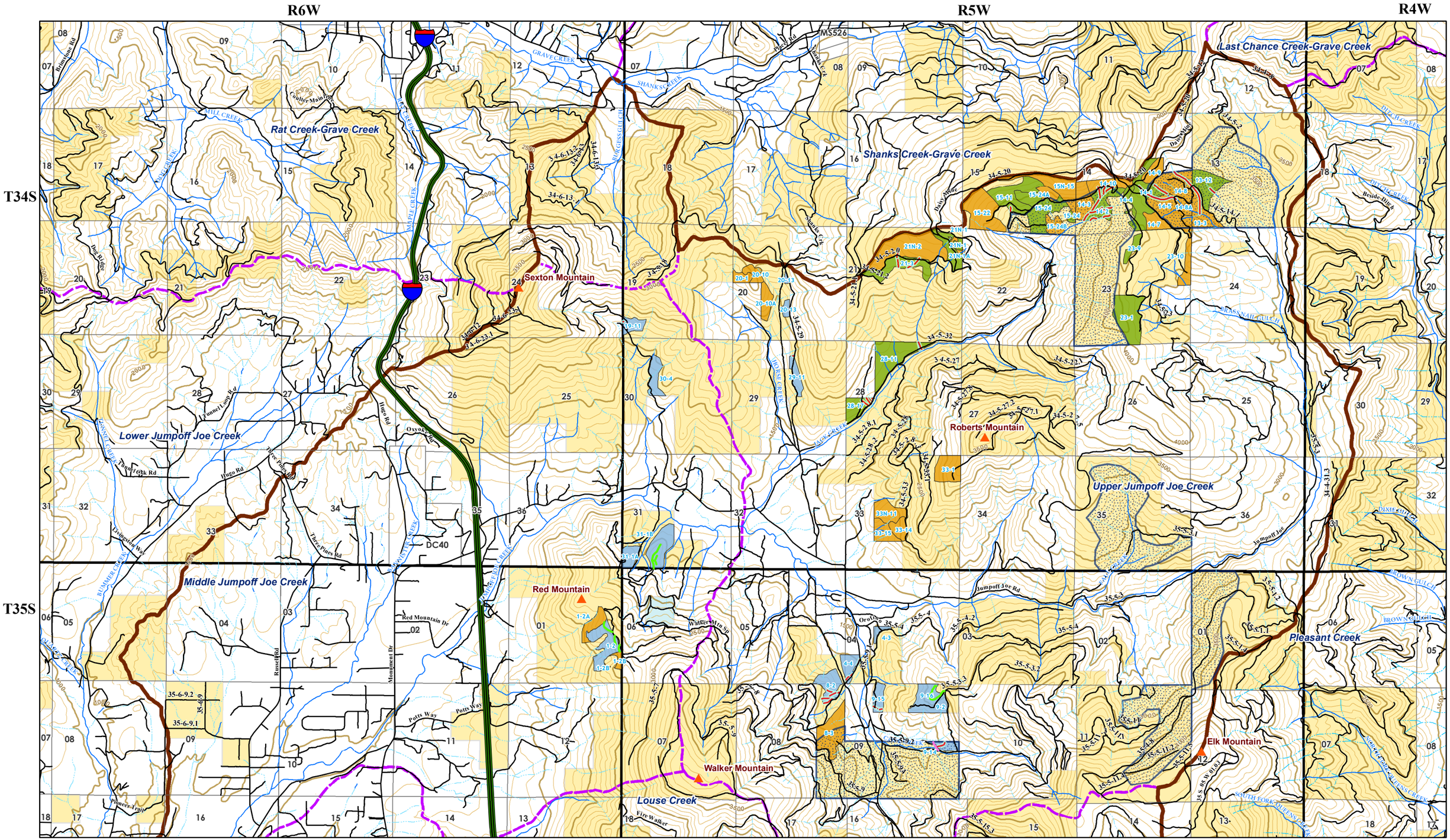
Road Work Activities	Road Number	Miles	Control	Surface	Hydro-logically Connected (yes or no)
	34-5-20 G	0.27	BLM	NAT	No
	34-5-14.2 A	1.07	BLM	NAT	Yes
	34-5-20 F	0.43	BLM	ASC	No
	34-5-14.2 B	0.78	BLM	NAT	Yes
	34-5-9	3.47	BLM	ASC	No
	34-5-15	0.99	BLM	ASC	No
	34-5-20 H	0.34	BLM	NAT	No
	34-5-14	1.72	BLM	NAT	Yes
	34-5-15.3	0.30	BLM	NAT	Yes
	34-5-14.3	0.93	BLM	Unknown	No
	34-5-14.1	1.35	BLM	NAT	Yes
	34-5-20 A	0.75	BLM	ASC	No
	34-5-20 C1	0.54	BLM	ASC	Yes
	34-5-20 B	0.04	BLM	ASC	No
	34-5-21.2	0.20	BLM	NAT	No
	34-5-28.5	0.19	BLM	NAT	Yes
	34-5-32B	0.59	BLM	ASC	Yes
	35-5-15	0.44	BLM	ASC	Yes
	35-5-15.1	0.36	BLM	ASC	No
	35-5-15.2	0.18	BLM	ASC	No
	35-5-4.3	0.39	Unknown	NAT	Yes
	35-5-4 A	0.05	BLM	NAT	No
	35-5-18.0B	0.70	PVT	NAT	Yes
	34-5-32C	1.01	BLM	ASC	Yes
	35-5-20.2A	0.11	BLM	NAT	No
	35-5-20.2B	0.21	PVT	NAT	No
	35-5-20.2D	0.46	PVT	NAT	Yes
	35-5-20.2F	0.06	PVT	NAT	No
	35-5-20.2G	0.39	PVT	NAT	Yes

Legend

ASC = Aggregate Surface Course NAT = Natural or Native GRR = Grid Rolled Rock
BST = Bituminous Surface Treatment PVT = Private

Jumping Bean Project Environmental Assessment Map - North



No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources and may be updated without notification.

Temporary Route Construction
Temporary Route Reconstruction
Roads
Perennial Streams
Intermittent Streams
Riparian Reserve Thinning
Density Management / Hazardous Fuels Reduction
Hazardous Fuels Reduction
Variable Density Thinning
Project Boundary
HUC 6 Boundary
Late Successsional Emphasize Areas
Index (100 ft. Contour)
Intermediate (100 ft. Contour)
Bureau of Land Management
U.S. Forest Service
State
Private/Unknown

0 0.5 1 2 3 Miles

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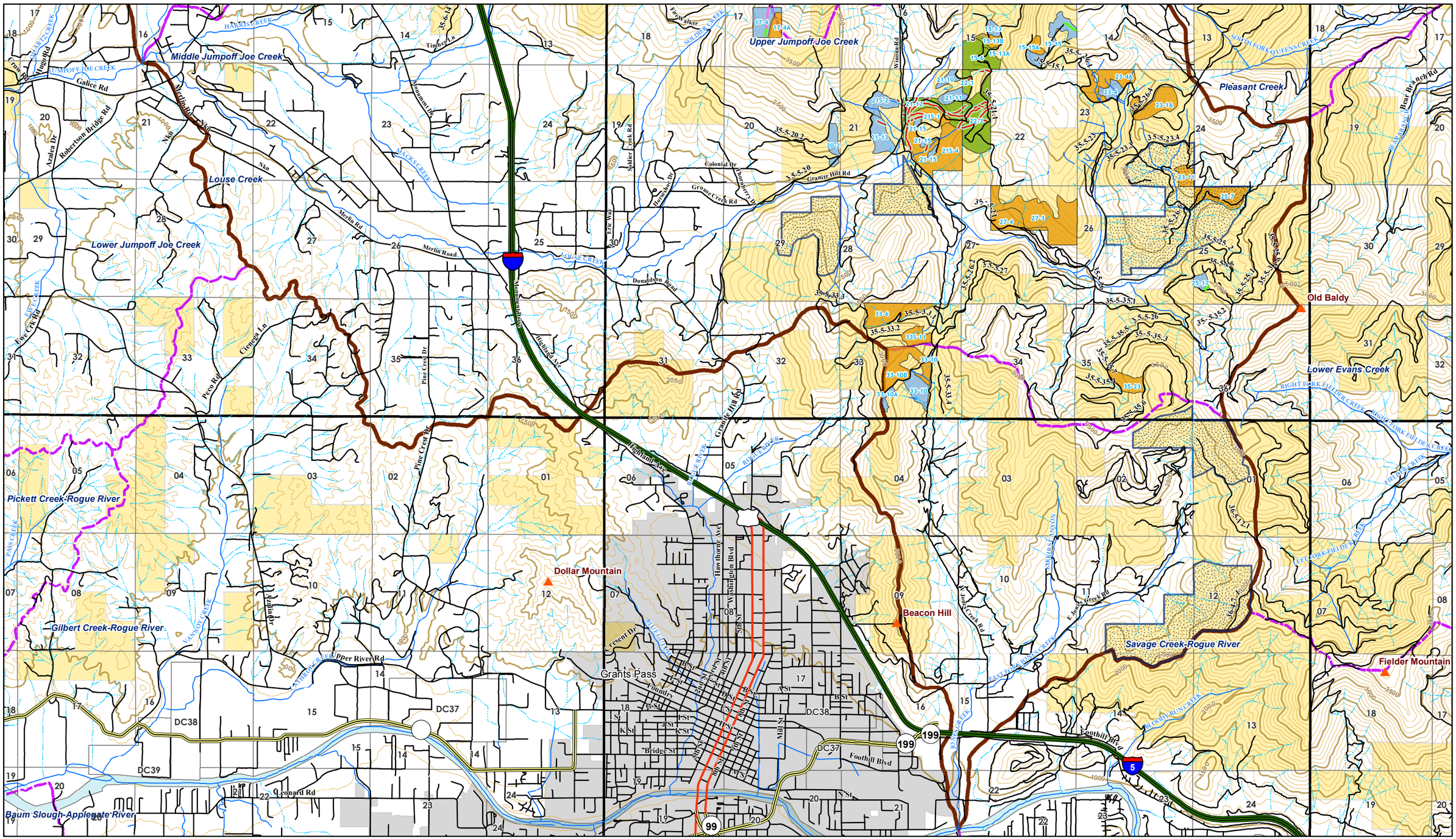
Prepared By: R.Snider
Current Date: 1/15/2013 06:21:15 AM
Creation Date: 1/14/2013 6:21:49 AM

Jumping Bean Project Environmental Assessment Map - South



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Temporary Route Construction
Temporary Route Reconstruction
Roads
Riparian Reserve Thinning
Perennial Streams
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Density Management / Hazardous Fuels Reduction
Hazardous Fuels Reduction
Variable Density Thinning
Project Boundary
HUC 6 Boundary
Late Successsional Emphasize Areas
Index (100 ft. Contour)
Intermediate (100 ft. Contour)
Bureau of Land Management
U.S. Forest Service
State
Private/Unknown

0 0.5 1 2 3 Miles

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Creation Date: 1/14/2013 6:24:43 PM

2.3 Description of Proposed Forest Management Treatments

Hazardous Fuel Reduction

This treatment is designed to reduce the existing fire hazard by thinning the understory of a stand to reduce the amount of surface and ladder fuels present. The desired future condition for fuels would be a reduction in ladder fuels that pose a risk of crown fire initiation, a discontinuous fuel concentration, and a reduction in the presence of surface fuels.

Treatments include slashing, hand-piling, pile-burning, chipping, lop and scattering, biomass removal, and/or under burning. Slashed material would be up to 8 inches diameter at breast height (dbh) and conifer spacing would be approximately 18 to 20 ft apart, and hardwood spacing would be 25 to 45 ft depending on hardwood size class (plus or minus 10%).

Riparian fuels reduction would not occur within 25 ft of the stream bankfull width.

Maintenance under burning is generally performed within 10 years following initial treatments and would be driven by the condition of the stand and re-growth of slashed vegetation. Maintenance under burning would be used to maintain the initial treatment through the use of prescribed fire.

Density Management (DM)

Treatment goals are intended to reduce stocking levels throughout the stand and promote growth and structural development of residual trees. Commercial timber extraction may occur under this treatment for the Jumping Bean Ecological Forestry Project, however; such material would be a by-product of the treatment and is not a driver for this treatment type.

To avoid homogenous conditions, prescriptions outside the Riparian Reserves are designed to incorporate gaps (±15% of the stand) to increase ground cover suitable to the site and growing conditions that provide for the establishment of early seral tree species. These areas would vary in size and shape, but typically would range from ¼ to 1 acre in size. In addition, untreated patches, or skips (10-15% of the stand), would be integrated into treatments. Skips would include the utilization of the natural stand features to retain untreated areas of various sizes. Post treatment, the average crown closure across the unit would range from 30 to 40% crown closure.

Slash would be treated using one or more of the following actions: lop & scatter, hand pile & burn, chipping, and/or biomass utilization.

Biomass removal could yard cut slash from Density Management treatments, but it would be outside field verified Ecological Protection Zones (EPZs) or Riparian Reserves (RRs). Biomass removal would utilize cut woody material via whole-tree yarding or yarding with attached tops to minimize the amount of slash remaining in units. The yarded material would be placed on the immediate downhill side of existing roads from landings.

Any remaining slash at landing sites would be piled and burned. In areas where biomass removal is not feasible, slash remaining in units would be hand pile/burned or lopped-and-scattered.

Maintenance under burning is generally performed within 10 years following initial treatments and would be driven by the condition of the stand and re-growth of slashed vegetation.

Figure 4: Visual Representation for Density Management - Current Conditions

The photograph above shows a stand at risk for a high severity crown fire. By thinning from below, targeting ladder fuels, and creating space between the crowns of overstory trees such as the large ponderosa pine pictured here, the fuel hazard would be reduced. In Dry Forests, stand variability is the result of low and mixed severity disturbance regimes. The goal of restoring spatial heterogeneity requires actions that create a non-uniform distribution of forest structural elements.

Variable Density Thinning (VDT)

Treatment goals are based on ecological forestry principles aimed to restore characteristic species composition and structural heterogeneity of dry forest ecosystems. These treatments integrate both thinning prescriptions with retention patches and openings to create a non-uniform distribution of forest structural elements. Such spatial heterogeneity is characteristic of late-successional forests. Treatment accomplishments at the stand level would restore resiliency, structure, and composition to historical dry forest landscapes.

Thinning prescriptions are incorporated to reduce ladder fuels and the risk of the loss of older trees from wildfire and competition while favoring retention of more fire and drought tolerant tree species (ponderosa pine, sugar pine, incense cedar). Treatments would commercially remove mostly small and medium sized trees, but can include removal of some larger young trees. Older trees are defined as those at least 150 years of age (Johnson and Franklin 2012;, Franklin and Johnson 2010;, Johnson and Franklin 2009;, REO 2001;, Franklin and Spies 1983;, NRC 2000;, Spies and Franklin 1991).

To avoid homogenous conditions, prescriptions outside the Riparian Reserves are designed to incorporate gaps (±15% of the stand) to increase ground cover suitable to the site and growing conditions that provide for the establishment of early seral tree species. These areas would vary in size and shape, but typically would range from ¼ to 1 acre in size. In addition, untreated patches, or skips (10-15% of the stand), would be integrated into treatments. Skips would include the utilization of the natural stand features to retain untreated areas of various sizes. Post treatment, the average crown closure across the unit would range from 30 to 40% crown closure.

Douglas-fir Series

Generally, after treatments, average stand basal area[2] would range between 80 and 120 ft^2/acre (some sites may require slightly lower or higher retention based on productivity e.g., 60 or 140 ft^2/acre). Trees greater than 150 years of age would not be prescribed for removal. Large oaks, ponderosa and sugar pines, and incense cedars would be favored for retention. Competing vegetation and fuels may be removed within twice the drip line length around most retention trees.

Portions (± 10-15%) of stands would remain untreated to protect and/or provide ecologically key features, habitat, hiding cover, and structure where such natural stand features exist. Gaps ranging from ¼ to 1 acre would be created (± 15% of stand, limiting 1 acre openings to every 6 or 7 acres) to stimulate establishment of fire and drought tolerant tree species (retain structure within gaps such as large conifers and hardwoods). Old pines would be favored to leave in the center of gaps. Low density planting may be appropriate to supplement natural seeding in these areas.

Where suitable pine seed trees are prone to wind damage on ridge-tops, the gap size would be decreased to ¼ acre and 100 ft^2 basal/acre would be present around the opening, if available. The position of pine seed trees would be varied in gaps to provide shade for future tree development. Around gaps, a basal area of 80 ft^2/acre would be present and the width of this area would be the average tree height of the stand. Gap edges would be separated by at least 150 ft (which is roughly one tree length) to ensure separation between gaps.

On dry ridges and lower productive sites, especially where manzanita and/or ponderosa pine are found, no more than 80 ft^2/acre of basal area may be retained, favoring ponderosa pine, incense cedar, sugar pine, and Douglas-fir, respectively.

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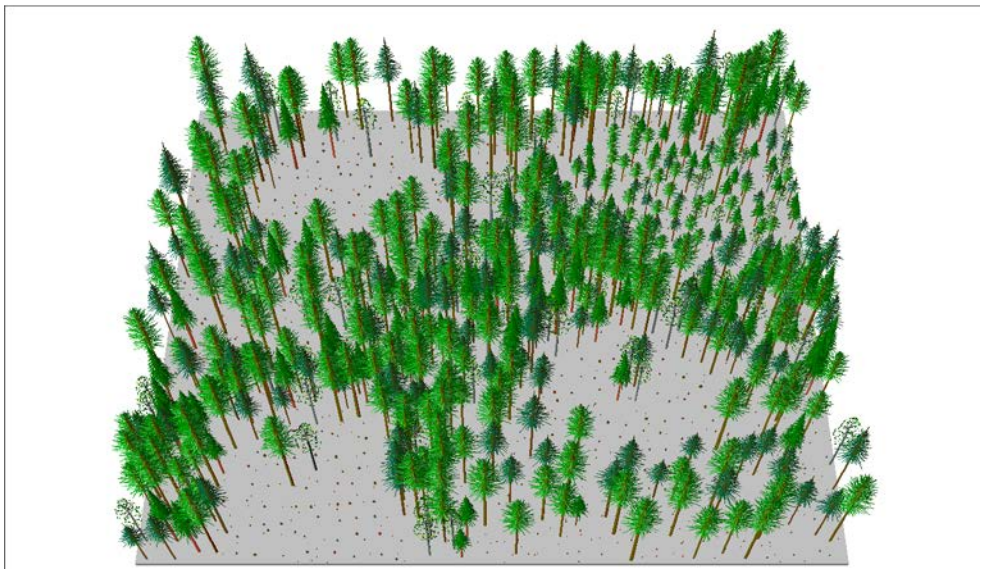
[2] See glossary for the definition of basal area.

Pine Series

The treatments in the Pine Series would implement forest restoration principles and, due to lower site productivity, these sites would not be able to carry or support the same densities as Douglas-fir sites.

As a result, lower overall stand basal area would be retained, at 60-80 ft^2/acre at the stand level. A basal area of 80-120 ft^2/acre may be incorporated where site productivity shifts to favor growth of Douglas-fir (e.g., aspect changes where Douglas-fir outperforms ponderosa pine). Trees greater than 150 years old would be retained. Hazardous fuels and competing vegetation may be removed within twice the dripline of identified retained trees.

Figure 5: Stand Visualization System - Variable Density Thinning



The illustration is created from a forest growth and yield modeling program to represent variable density thinning. In this case the treatment creates ¼ to 1 acre gap openings so that ±15% of the stand has structural heterogeneity to stimulate the establishment of fire and drought tolerant early seral species, and to enhance the development of legacy structures. ***Source:*** *Rolf Gersonde*

Biomass removal could yard cut slash from Variable Density Thinning treatments, but it would be outside field verified Ecological Protection Zones (EPZs) or Riparian Reserves (RRs). Biomass removal would utilize cut woody material via whole-tree yarding or yarding with attached tops to minimize the amount of slash remaining in units. The yarded material would be placed on the immediate downhill side of existing roads from landings. Any remaining slash at landing sites would be piled and burned. In areas where biomass removal is not feasible, slash remaining in units would be hand pile/burned or lopped-and-scattered.

Tree Planting

This treatment involves tree planting of conifer species (ponderosa pine, sugar pine, incense cedar, and Douglas-fir) to supplement stocking. It is utilized for restoring early seral, drought and fire tolerant species. Following initial treatment, units would be assessed (particularly those that have incorporated gaps) for planting needs based on the available planting space. Tree planting would be conducted at low levels from 150-303 trees per acre to assure basic levels of restocking. Species selected to regenerate sites would be based on site condition, but priority and preference would be given to fire resilient early successional species (i.e., ponderosa pine, incense cedar, and sugar pine).

Activity Fuel Treatments

Activity fuel refers to slash created from timber and vegetative treatments. To reduce the fuel loading, slash would be treated using one or more of the following actions: hand pile/burned, chipped, lopped and scattered and/or underburned based on a post-treatment assessment of fuel loading.

Trees to be removed for harvest would be whole-tree yarded or yarded with tops attached. Slash generated from whole-tree yarding would be brought to the landing where it would be piled and burned, chipped, or removed for biomass utilization.

Riparian Thinning

Field surveys for the Jumping Bean Ecological Forestry Project revealed that Riparian Reserves within Units 13-12, 14-1, 14-2, 15-11, 19-11, 20-13, 21-3, 21-13, 28-17, 29-11, 31-1A, 31-1B, 4-4, 8-2, 9-14, 9-15, 21-12, 21-13, 21-15, 22-1, 22-3, and 28-11 are in need of stand treatments to help accelerate the development of late successional conditions. Within these stands riparian thinning would benefit perennial and intermittent condition and function of streams, fish habitat, and habitat for other aquatic species habitat. The Riparian Reserves proposed for treatment were selected based on field stream survey information and silvicultural review. Stands that exhibited conditions such as overstocking, minimal canopy layers, low species diversity, or low conifer and hardwood vigor were selected for treatment.

The objective of riparian thinning treatments is to expedite the development of late successional, multi-story habitat conditions and “restore the species composition and structural diversity of the plant communities”, needed to achieve Aquatic Conservation Strategy (ACS) and Riparian Reserve objectives (Medford RMP, p. 22 and p. 26, respectively); accelerate the development of late-successional stand conditions, such as older forest stand characteristics; increase conifer growth rates; and to encourage larger remnant conifers and hardwoods. Activities that are intended to enhance Riparian Reserve characteristics to attain ACS objectives are authorized under the NWFP following the completion of a Watershed Analysis (Standards and Guidelines, pg. C-31-32). The Jumpoff Joe Creek, Grave Creek, and Grants-Rogue River Watershed Analyses were used in the analysis of this Planning Area. They are available for review on the Medford BLM website. Production of wood volume would be a by-product of this treatment, not a primary objective.

Riparian Thinning Protection Zones

Treatments within the Riparian Reserves of the 22 units listed above would occur in accordance with the following prescriptions to ensure protection of water quality during treatments. The following paragraphs describe what actions are permitted to occur within the different protection zones of these Riparian Reserves.

All units proposed for treatment would have a minimum 25 ft no treatment buffer, from bankfull width, to protect streambank stability. This 25 ft buffer would be implemented for fuels and non-commercial understory treatments in both, the units with full Riparian Reserve Buffers, and the 22 units that are proposed for commercial Riparian Thinning treatments. Studies have shown that "vegetation immediately adjacent to the stream channel is most important in maintaining bank integrity" (FEMAT 1993). Twenty-five feet is roughly equal to the crown width that is generally present on trees occurring within riparian stands that have been chosen for treatment under this project. For Douglas fir trees typical of these stands, crown width generally relates to the extent of the root network (Kocher, 2005) that is helping to stabilize the streambanks. In addition to the stabilizing effect of the root network, adjacent trees also dissipate stream energy during high or overbank flows, further reducing bank erosion (FEMAT 1993).

Within the 22 units proposed for Riparian Reserve thinning treatments, an additional Ecological Protection Zone (EPZ) with a slope distance between 75 ft and180 ft would be implemented. Within this protection buffer, no timber yarding would occur and only trees in the understory less than 8 inches dbh would be treated. The specific distance for the EPZ was developed using protection criteria[3] for individual elements of the Riparian Reserve. For an initial protection distance determination the Ecological Protection Width Needs chart (p. B-15, Northwest Forest Plan: Standards and Guidelines) is used. This chart is based on many factors that provide a good starting distance for riparian protection. These factors are: slope and rock type, potential surface erosion of streamside slopes, fluvial erosion of the stream channel, soil productivity, habitat for riparian-dependent species, the ability of streams to transmit damage downstream, and the role of streams in the distribution of large wood to downstream fish bearing waters. Next in the EPZ development process, the initial distance is refined based on individual site specific survey form information. This information, collected by trained BLM field survey crews, assesses numerous riparian characteristics including current stream bed and bank character and condition, current riparian zone and Riparian Reserve stand conditions, the amount of large woody debris (LWD) present, the presence of any slumps or other mass movement indicators, and any chronic sources of erosion. This information is field

[3] Ecological Protection Width Needs chart (Northwest Forest Plan Record of Decision, p. B-15); Forest Ecosystem Management Assessment Team (FEMAT) 1993; and the Northwest Forest Plan Temperature Total Maximum Daily Load (TMDL) Implementation Strategies, U.S. Forest Service and BLM, 2005 and updated 2010).

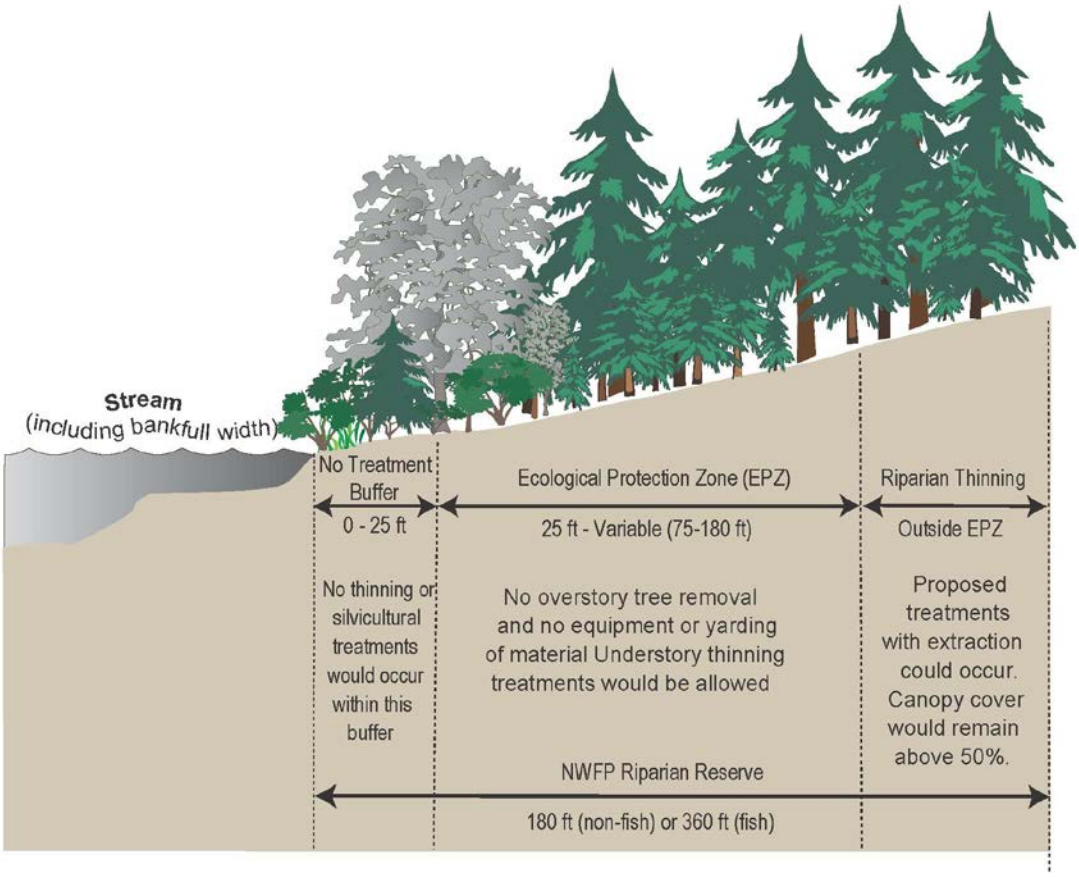
checked by a BLM hydrologist, then used to develop the final EPZ buffers for proposed Riparian Thinning units.

Also included within this EPZ is full protection of the primary shade zone, which ranges from 50-85 feet as described in the updated NWFP Temperature TMDL Implementation Strategies (USDA/USDI, 2010), and sufficient canopy closure within the secondary shade zone to maintain or improve microclimate conditions within the riparian zone in the long term, without any measurable increase in stream temperature in the short or long term. This buffer meets or exceeds the minimum distance need to protect the primary shade zone of the stream, and would ensure that temperature is not altered during Riparian vegetation treatments.

The riparian thinning treatments within the Riparian Reserve (outside the variable width EPZ) in these 22 units would be accomplished to promote forest health as discussed above. Canopy cover would remain above 50%, and species diversity would be maintained. Any variable density gaps created within the Riparian Reserve would be less than ¼ acre in size. All activities in the Riparian Reserve would be designed to ensure that habitat conditions for the wildlife and plant species that use this zone are not degraded.

All remaining units proposed for commercial treatments as part of the Jumping Bean Ecological Forestry Project would receive a full Riparian Reserve, no commercial harvest buffer, of 180-360 ft (one or two potential tree height(s)) depending on the stream type. It was determined by the interdisciplinary team (IDT) that treatment of the Riparian Reserves within these units is not needed at this time because these trees are of an older age class and the stand is already on a good trajectory to achieving the late successional characteristics desired within federally managed Riparian Reserves.

Figure 6: Riparian Thinning Management Adjacent to Streams



Temporary Route Construction

This action includes short-term overland roads, primitive roads or trails authorized or acquired for the development, construction or staging of a project or event that has a finite lifespan. Temporary routes are not intended to be part of the permanent or designated transportation network system.

Temporary routes would be decommissioned within 18 months after harvesting, following the treatment of activity fuels. Temporary route decommissioning for this project would involve blocking roads, sub-soiling the road surface to 18 inches or bedrock to allow for water filtration, installing waterbars (if needed), and applying seed and mulch. Waterbars would filter water runoff and direct drainage off the road surface and away from streams and into vegetation that is adequate to slow surface water, and allow for deposition of detached soil particles. Mulching helps minimize surface erosion and seeding helps to establish vegetation re-growth.

Temporary Route Re-construction

This action restores an existing road bed to its original or modified condition for temporary use. Re-constructed routes would be decommissioned after harvesting and activity fuels are treated for this project.

Existing Road Re-construction

Existing road 34-6-13.1C would require approximately 500 ft (centerline distance) of reconstruction to widen a hairpin turn that is currently inadequate for safe haul. During reconstruction activities at least three ditch relief culverts would be installed to disperse water that is presently flowing within the existing ditchline off the road. The upper most culvert would replace and existing plugged culvert, a second culvert would be placed 75 to 100 ft below that which will discharge out on an existing bench. The third culvert would be on the main road where there are signs of exiting erosion. All culverts would be installed with a rip rap splash pad at the culvert outlet to dissipate water and reduce erosion. The curve widening itself would not modify the outside fill slope; rather, the widening would redistribute cutslope material from the inside of the curve where the original curve was constructed. Material taken from the inside of the curve would be redistributed and compacted along the running surface of the road through the curve area to flatten the grade as much as possible as this is adverse haul.

Road Maintenance

This action involves activities on an existing road designated as part of the transportation network to keep a road at its original design standard. Typical maintenance would include, but is not limited to: blading and shaping; cleaning of ditches, catch basins and culverts; brush cutting and vegetation removal from roadway; surface patching and pot hole repair; surface replacement; culvert replacement; and slide removal.

2.3.2 Best Management Practices and Project Design Features

Best Management Practices (BMPs) are required by the Federal Clean Water Act to reduce nonpoint source pollution to the maximum extent practicable. The BMPs are methods, measures, or practices established from Appendix D of the 1995 ROD/ RMP, and the ODEQ Erosion and Sediment Control Manual (April, 2005), and per IM OR-2011-18. BMPs are essential for ensuring that water quality will be maintained at its highest practicable level. BMPs in this Section are noted by an asterisk *.

Project Design Features (PDFs) are specific measures included in the site specific design of the proposal to eliminate or minimize adverse impacts on the human environment. Specific BMPs and PDFs for the Jumping Bean Ecological Forestry Project were developed by the project interdisciplinary team from management guidance of the 1995 Medford ROD/RMP (Appendix D), 2008 Medford ROD/RMP (Appendix C), BLM Information Memorandum (IM OR-2011-074), and other regulatory laws for resource protection measures specific to the Activity Area.

2.3.2.1 Soil Productivity, Soil Compaction, Residual Trees, and Coarse Woody Debris

The amount of soil compaction and productivity loss will be based on percentages per unit. Soil productivity calculations are based on acres of actual compaction and

displacement. For the Jumping Bean Project, implementation of Best Management Practices and Project Design Features will limit compaction within 12% and productivity loss within 5% as analyzed in the 1994 Medford District FEIS RMP.

Harvest Operations

- Existing skid trails would be utilized whenever practical. New skid trails would be pre-designated and approved by the Authorized Officer.

- Ground based yarding would generally be limited to slopes less than 35%.

- Ground-based logging would not occur when soil moisture at a depth of 4-6 inches is wet enough to maintain form when compressed, or when soil at the surface would readily displace, causing ribbons and ruts along equipment tracks. These conditions are generally found when soil moisture, at a depth of 4-10 inches is between 15-25%, depending on soil type.

- New skid trails would be scarified and winterized, prior to the rainy season, as necessary to prevent chronic erosion.

- Within harvest units that are planned for future entry, utilized skid trails would be rehabilitated as necessary to reduce the total compacted area to less than 12% upon completion of harvest. Where less than 12% cannot be achieved as a result of existing compaction on pre-existing skid trails that were not utilized for this harvest, all utilized skid trails would be rehabilitated.

- Tractors would be equipped with an integral arch to minimize soils disturbance and compaction.

- Tractors would not exceed 9 ft in width and would be equipped with an integral arch to minimize soils disturbance and compaction. Skid trails including turning points would be 12 ft width on average.

- The use of blades while tractor yarding would not occur to minimize soil disturbance and to keep soil organics on site. Equipment would walk over as much ground litter as possible to reduce compaction.

- Harvest equipment used off of designated skid trails would operate on ground less than 35% slope, have an arm capable of reaching at least 20 feet and minimize turning. The harvest equipment must walk on a minimum 4-6 inch slash mat of existing or created slash under treads. To prevent operations from exceeding the maximum 5% soil productivity loss or 12% compaction levels across the harvest unit, equipment use may be restricted depending on soil type, soil moisture, ground pressure of the equipment, and presence of slash to operate on.

- Whole tree yarding with tops attached to the last log would be permitted as long as contractor can operate without causing unacceptable damage from bark slippage, girdling, broken tops, or damage to live crowns. If it is determined by the Authorized

Officer that unacceptable amounts of damage is occurring, trees would be required to be bucked and limbed as directed by the Authorized Officer, with delivered log length not to exceed 41 ft.

- Lateral yarding would be required on all units to protect residual leave trees and existing conifer regeneration. Yarding carriages would be required to maintain a fixed position during lateral yarding to reduce damage to the residual stand.

- The number of cable yarding corridors would be minimized to reduce soil compaction and displacement from cable yarding. Cable yarding corridors would be located approximately 150 ft apart at the tail end.

- At a minimum, partial suspension would be required on all units to minimize soil disturbance.

* Prior to October 15 of the same operating season, winterization would occur on landings, yarding corridors, and other areas of exposed soils.

- All new landing areas would be rehabilitated to reduce soil compaction, minimize sedimentation, and improve site productivity.

- A minimum of 120 linear ft of logs per acre greater than or equal to 16 inches in diameter and 16 ft long in decay classes 1and 2 are directed to be left under the Resource Management Plan General Forest Management Area Management Action/Direction (BLM 1995 p.39) for coarse woody debris (CWD).

Activity Fuels and Prescribed Fire

- Landing piles and handpiles located on temporary routes, skid trails, or landings would be burned, chipped, or otherwise removed from these sites typically within 18 months of unit harvest completion.

- Merchantable sawlogs would be removed from yarded material, and any remaining debris at the landing sites would be piled and burned on the immediate downhill side of existing roads, chipped, or removed for biomass utilization.

- Activity slash remaining in units would be lopped-and-scattered, chipped, or handpiled and burned to prevent an increase in fire hazard.

- A minimum of 10% of each Hazardous Fuels Reduction unit greater than 10 acres would remain untreated. The no treatment areas should be ¼ to 1 acre, unless they are linked to other no treatment areas designated for other resource concerns.

- Firelines would be constructed by hand.

- A minimum 20 ft distance on the ground would be cleared activity slash around each landing pile to prevent escaped fire. Each landing pile would be covered with a large

enough piece of 4 mil black plastic to ensure a dry ignition spot (generally 10 ft x 10 ft or large enough to cover 80% of the pile).

- Approximately 10% of handpiles during hand pile and burn treatments units would be left untreated.

- Landing piles would not be placed adjacent to or within 15 ft of leave trees to minimize potential scorch and mortality. Landing piles would be as free of dirt as reasonably possible to facilitate desired consumption.

- Piles would be covered with plastic large enough to ensure a dry ignition spot (generally 5x5 ft or large enough to cover 80% of the pile).

- Slash piles would not be allowed on roadways, turnouts, shoulders, or on the cut bank.

- Piles would be burned in the fall to spring season after one or more inches of precipitation have occurred. Patrol and mop-up of burning piles would occur when needed to prevent treated areas from re-burning or becoming an escaped fire.

- Handpile burning and underburning operations would occur at a minimum of 12 months following the implementation of adjacent commercial treatments (VDT and DM) to ensure ground vegetation that could be trapping erosion from yarding activities is not removed.

- Prescribed fire burn plans would be completed before ignition, as would smoke clearance to minimize impacts on air quality.

- Snags identified for retention (approximately 20 inches in diameter) would have all slash and duff cleared around base prior to underburning.

Temporary Route Construction and Re-Construction

- Temporary routes would not be located on or above a headwall or on slopes in excess of 70%.

- All temporary routes would be blocked and decommissioned within 18 months of harvest, after landing and handpile burning is complete. Decommissioning would include sub-soiling of the entire roadbed to a depth of 18 inches or bedrock, installing water- bars as necessary to ensure surface drainage, and seeding and mulching of all bare soil.

- Fill material used in the construction of temporary route beds would be pulled back, properly placed, and stabilized on a sub-soiled running surface for re-establishment of the original ground line. Upon completion, implement all the necessary surface erosion stabilization treatments, as stated in the above PDF.

* Prior to October 15 of the same operating season, winterization would occur on landings, yarding corridors, skid trails, and other areas of exposed soils.

- Temporary route construction and temporary route re-construction and decommissioning would not occur when soil moisture, at a depth of 4-6 inches, is wet enough to maintain form when compressed; or when soil moisture at the surface would readily displace, causing ribbons and ruts along equipment tracks. These conditions are generally found when soil moisture at a depth of 4-10 inches is between 15-25% depending on soil type.

2.3.2.2 Stream Sedimentation

Harvest Operations

* Landings and landing piles would be placed outside of Ecological Protection Zones in all units except 13-12, 28-11, 28-17, and 9-15. For units 13-12, 28-11, 28-17, and 9-15, existing roads located within the EPZ may be utilized as landings as needed. Use of these roadside landings would not create any additional compaction or remove any shade. Some brush and understory trees would be allowed to be cut within 50 ft of the road. No shade trees would be cut. To prevent any measurable sediment from entering an adjacent stream during use, sediment control devices would be properly installed between the landing and the stream prior to activities. These sediment barriers would be placed, maintained, monitored, and removed in accordance with the Oregon Department of Environmental Quality ODEQ Erosion and Sediment Control Manual (2005) by the purchaser and contract administrator. These barriers would remain onsite until all bare soils are stabilized and road drainage is re-established.

* Any project related activities would be suspended by the authorized officer if conditions develop that cause a potential for sediment laden runoff to enter a wetland, floodplain or waters of the state. All exposed soil would be covered or otherwise temporarily stabilized. Sediment trapping devices would be properly installed to hydrologically disconnect sites. Operations would resume when sediment control devices are in place and conditions allow turbidity standards to be met.

- Landings would be located on stable locations that minimize sediment delivery potential to streams (e.g., ridge tops, stable benches or flats, and gentle-to-moderate side-slopes), in areas with low risk for landslides, and outside jurisdictional wetlands. Placement of landings on unstable headwalls and steep channels would be avoided adjacent to side slopes.

* To the greatest extent practicable, locating new landings in areas that can contribute eroded fines to dry draws and swales would be avoided. If such locations cannot be avoided, sediment control measures would be properly installed and maintained, as needed, to keep eroded material on site.

- Landing runoff would divert water away from headwalls, unstable areas, or stream channels.

- Landings used during dry conditions within the wet season (generally October through May) that have the potential to release sedimentation into a stream or wet area via ditchlines or other means, would have silt fencing or other sediment control measures in place during periods of non-use if they are hydrologically connected[4] to streams.

* Prior to winter rains, cable yarding corridors that are above or nearly perpendicular (approximately 60-90 degrees) to stream channels within Riparian Reserves, or hydrologically connected to ditchlines, would be water-barred and have slash placed over them to protect water quality (Best Management Practice, RMP p.167).

Road Maintenance and Haul

* Haul would not occur on all hydrologically connected roads when water is flowing in the ditchlines or during any conditions that would result in any of the following: surface displacement such as rutting or ribbons; continuous mud splash or tire slide; fines being pumped through road surfacing from the subgrade and resulting in a layer of surface sludge; road drainage causing a visible increase in stream turbidities, or any condition that would result in water being chronically routed into tire tracks or away from designed road drainage during precipitation events. Hauling on natural surface or rocked roads would not resume for a minimum of 48 hours following any storm event that results in ½ inch or more precipitation within a 24 hour period, and until road surface is sufficiently dry to prevent any of the above conditions from reoccurring, and as approved by the Authorized Officer.

- Non-emergency road maintenance work would occur during the dry season (generally between May 15 and October 15). Certain activities (blading of aggregate roads, rocking, brushing, cross drain installation) would be permitted during the wet season (generally Oct 15 -May 15) when conditions are dry. If these activities would occur within 200 ft of streams, sediment control devices would be placed and maintained as necessary to prevent action related stream sedimentation.

- No ditch maintenance would occur during the wet season unless for safety or resource protection. Work would be suspended during precipitation events or when observations indicate that saturated soils exist to the extent that there is visible runoff or a potential for causing elevated stream turbidity and sedimentation. Emergency road work could occur during the wet season.

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[4] Hydrologically Connected = where drainage features are connected to stream channels via surface water flow routes, including headwater springs. This determination is made with project specific field verified stream surveys to identify where sediment has the potential to be carried to streams; where precipitation and subsurface flows on impermeable road surfaces may be intercepted, concentrated, and carried to stream channels; and where ditchlines are increasing the stream network (for more information see the Williams IVM Project Record stream surveys and Hydrologically-Connected Roads: An Indicator of the Influence of Roads on Chronic Sedimentation, Surface Water Hydrology, and Exposure to Toxic Chemicals by M. Furniss et al. (USDI, Forest Service Stream Systems Technology Center website at http://stream.fs.fed.us/news/streamnt/jul00/jul00_2.htm).

* Blading and vegetation removal would be avoided unless necessary to remove drainage impediments when maintaining inboard ditches. Sediment control measures would be evaluated and implemented if necessary, where ditchline blading is required within 200 ft of streams.

- Waste material from road maintenance activities would be placed in stable disposal areas a minimum of 200 ft from any stream and in a location where sediment laden runoff can be confined. Where necessary, erosion control would be provided to minimize sediment delivery to streams.

* Where hydrologically connected, log hauling on natural surface and rocked roads would not occur under wet conditions to protect water quality. Surface displacement such as rutting or ribbons, continuous mud splash or tire slide, fines being pumped through road surfacing from the subgrade, road drainage causing a visible increase in stream turbidities, or any condition that would result in being chronically routed into tire tracks or away from designed road drainage during precipitation events (RMP, p. 166).

* All natural surface or rocked roads that are re-opened for harvest operations or log hauling would receive adequate surfacing for winter use (generally 6-12 inches of clean, compacted rock), be gated prior to the wet season, or would be blocked prior to the wet season and stabilized in such a way that no future maintenance would be necessary to prevent road damage or stream sedimentation.

* Road surfaces would be maintained by applying appropriate gradation of aggregate and suitable particle hardness to protect road surfaces from rutting and erosion for wet weather haul where runoff drains to wetlands, riparian management areas, floodplains and waters of the state. If appropriate gradation of aggregate and suitable particle hardness to protect road surfaces cannot be achieved to protect water quality, haul would be limited to the dry season and/or install and maintain sediment control devices.

* Roads would be bladed and shaped to conserve existing aggregate surface material, and retain or restore the original cross section. Berms and other irregularities would be removed that impede effective runoff or cause erosion. During road improvement activities it would be ensured that surface runoff is directed into vegetated, stable areas to the extent practical.

- When cleaning ditchlines, undercutting of cut-slopes would be avoided. Bare soils would be seeded and mulched including cleaned ditchlines that are hydrologically connected to stream channels. Routine machine cleaning of ditches and blading during the wet season would be avoided, generally November through May of the next calendar year.

* Low-growing vegetation on cut-and-fill slopes would be retained (i.e., grasses, ferns).

* Prior to wet season hauling activities, structural road treatments would be implemented as needed to prevent discernible stream sedimentation from occurring during off season use, such as: increasing the frequency of cross drains, installing sediment barriers or catch basins, applying gravel lifts or asphalt road surfacing at stream crossing approaches, and cleaning and armoring ditchlines.

* Culvert inlets and outlets, drainage structures and ditches would be inspected and maintained before and during the wet season to diminish the likelihood of plugged culverts and the possibility of washouts.

- Flowing water would be diverted around each culvert or cross drain installation site whenever there is sufficient water volume. Diverted water would be returned to the channel immediately downstream of the work site. Effective erosion control measures would be in place at all times during installation, and would be removed from the channel prior to October 15th of the same calendar year.

* Sediment reduction techniques would be implemented such as settling basins, brush filters, sediment fences and check dams to prevent or minimize sediment conveyance to streams.

- Stored sediment behind erosion control devices would be removed from channel and disposed of in a stable location outside the Riparian Reserve.

- Natural surface and rocked haul routes and related ditchlines that could deliver sediment into Southern Oregon/Northern California Coasts coho critical habitat would have sediment barriers (e.g., hay bales, silt fence, settling ponds) installed to prevent sediment from reaching these streams. Specifically these sediment barriers would be applied to BLM road #35-5-21.

- Sediment barriers would be placed by the purchaser according to specifications and locations outlined by the BLM fish biologist, engineer, and contract administrator. These barriers would be maintained and monitored (Oregon Department of Environmental Quality ODEQ Erosion and Sediment Control Manual 2005) by the purchaser and contract administrator during haul route usage.

- During roadside brushing, vegetation would be removed by cutting rather than uprooting, whenever practical. Where uprooting is necessary to remove undesirable species from the ditchline or roadsides within 100 ft of stream crossings on hydrologically connected roads, it would be ensured that sediment control devices are installed and properly maintained until the site re-stabilizes.

- Downspouts and/or energy dissipaters would be utilized for drainage outlets.

* Water or approved road surface stabilizers/dust control additives would be applied as necessary where haul roads are located near residences and where needed to reduce surfacing material loss and buildup of fine sediment that can enter into wetlands,

floodplains and waters of the state. Road surface stabilizers/dust control additives would be prevented from entry of into waters of the state during application.

Temporary Route Construction and Re-construction

- During construction, rehabilitation, and winterization of roads, temporary routes, skid trails, and landings, runoff water would be diverted away from headwalls, slide areas, high landslide hazard locations or steep erodible fill slopes.

- Construction and rehabilitation of temporary routes, and road and route renovation/improvement would not occur when soil moisture, at a depth of 4-6 inches, is wet enough to maintain form when compressed; or when soil at the surface would readily displace, causing ribbons and ruts along equipment tracks. These conditions are generally found when soil moisture at a depth of 4-10 inches is between 15-25% depending on soil type.

- To protect water quality, the temporary route into Unit 9-14 would be required to be re-constructed, used, and decommissioned during the dry season of a single year, and when no water is flowing in the intermittent stream channel. If flow is encountered during the dry season, the authorized officer may grant a waiver authorizing use, if a temporary crossing is installed over the stream channel. Flowing water would be diverted around the stream crossing site during decommissioning actions on the route into Unit 9-14 if there is sufficient water volume, and would be returned to the channel immediately downstream of the work site.

- In addition to the standard temporary route decommissioning requirements stated above, decommissioning of the route into Unit 9-14 would include reconnection of the stream channel crossing, pulling the banks of the stream channel back 2 to 1 from bankfull, and armoring of the channel and stream banks, through the entire disturbed area, to prevent future instances of accelerated erosion during winter flows.

2.3.2.3 Fragile Soils

Fragile Suitable Surface Erosion Potential Restricted (FMR)

Activity Fuels and Prescribed Burning (23-1A)

- Activity slash would be placed on bare soils within yarding corridors and below landing sites. Slash depth would not exceed 18 inches, and would be left on site during fuels reduction treatments.

- Large cull logs (greater than 12 inches on the small end) would be left on the site unless quantity is such that an increase in fire hazard classification would result. In this case, cull logs could be removed only as necessary to reduce the fire hazard classification.

- Underburning operations would be restricted to spring-like conditions when the maximum duff layer retention can be attained and minimum course woody debris and snag retention requirements (USDA/USDI 1994b, p. C-40) can be achieved.

- Mechanically piling slash would not occur.

Road Maintenance

- Additional drainage features that are added during road maintenance activities would be located away from steep draws and would be designed to disperse water back into the hillside.

- Downspouts or energy dissipaters would be utilized for drainage outlets.

- Ground cover would be retained to the greatest extent possible during maintenance on both FNR and FMR lands to protect from excessive erosion.

Fragile Suitable Nutrient Restricted (FNR)

Harvest Operations (Unit 19-11, 21N-1, 23-4)

- Whole tree yarding and biomass removal would only occur if necessary to prevent an increase in the fire hazard classification for the unit.

- Mechanically piling slash would not occur.

Activity Fuels and Prescribed Burning (Units 21N-2, 19-11, 23-4)

- Lop-and-scatter activity slash would be placed over yarding corridors and across remaining FNR soils in each unit. Where slash quantity is such that lop-and-scatter treatment alone would result in an increase in the fire hazard classification, high concentration of slash would be handpiled and burned outside yarding corridors.

- Burning would be minimized to maintain vegetative cover, soil organic matter and preserve the duff layer. If burning is required, burns would occur in cool spring like conditions. Slash would not be mechanically piled.

- Large cull logs (greater than 12 inches on the small end) would be left on the site unless quantity is such that an increase in fire hazard classification would result. In this case, cull logs could be removed only as necessary to reduce the fire hazard classification.

- Under burning operations would be restricted to spring-like conditions when the maximum duff layer retention can be attained and minimum course woody debris and snag retention requirements (USDA/USDI 1994b, p. C-40) can be achieved.

Fragile Nutrient Non-Suitable (FNNW)

Harvest Operations (Units 30-4[5])

- No whole tree yarding would occur.
- Mechanically piling slash would not occur.
- Whole tree yarding and biomass removal would only occur if necessary to prevent an increase in the fire hazard classification for the unit.

Activity Fuels and Prescribed Burning (Units 21S-1, 21S-4, 30-4)

- Slash would not be mechanically piled.
- Lop-and-scatter activity slash would be placed over yarding corridors and across remaining soils in each unit. Where slash quantity is such that lop-and-scatter treatment alone would result in an increase in the fire hazard classification, high concentration of slash would be handpiled and burned outside yarding corridors.
- Under burning operations would be restricted to spring-like conditions when the maximum duff layer retention can be attained and minimum course woody debris and snag retention requirements (USDA/USDI 1994b, p. C-40) can be achieved.

2.3.2.4 Riparian Reserves

Harvest Operations

* On all units, a minimum 25 ft no treatment buffer, from bankfull width, would be used to protect streambank stability.

* Outside of the 25 ft no treatment buffer, streams would have a variable width Ecological Protection Zone (EPZ). Within the EPZ, no commercial harvest or yarding activities would occur. Non-commercial understory thinning and fuel reduction activities would be allowed, but canopy closure would remain at existing levels and vegetative species diversity would be maintained.

* Treatments within the Riparian Reserve that are outside the variable width EPZ would maintain canopy cover above 50%, and retain the structural diversity of the stand.

* Springs and perennial wet areas would receive a radial buffer that would prohibit any overstory canopy removal or ground disturbance. This buffer would extend outwards from the edge of the riparian vegetation for a distance equal to the EPZ width designated for that unit, or 100 ft (whichever is smaller) in order to protect the ecology of these sites.

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[5] This unit is being re-classified from TPCC withdrawn to TPCC restricted, due to site conditions showing evidence that this unit would meet stocking levels of commercial species.

* Slumps, intermittent seeps, and other unstable areas would be buffered (no treatment) by leaving one row of overstory trees or a 25 ft diameter (whichever is greatest), from the outer edge of instability, around these areas for soil stabilization.

* Unless unsafe, trees within Riparian Reserve boundaries (one or two site potential trees) would be directionally felled away from the stream, and upslope trees would not be felled into Riparian Reserves.

* Trees in no-harvest portions of Riparian Reserves that are unintentionally knocked over during falling and yarding would be retained on site for fish/wildlife habitat.

- Any project related activities would be suspended if conditions develop that cause a potential for sediment laden runoff to enter a wetland, floodplain, or waters of the state.

- Cleaning culvert inlets in stream channels would occur during the low flow period (generally June 15 to September 15) in accordance with Oregon Department of Fish and Wildlife (ODFW) in-stream work period guidelines.

- If material is excavated for temporary routes, it would be placed in locations where it cannot enter streams or other water bodies. If side slopes generally exceed 60 percent or where side-cast material may enter waterbodies, wetlands, or floodplains, excavated material would be end-hauled to minimize side-casting of waste material.

* Suspend ground disturbing activity if projected forecasted rain would saturate soils to the extent that there is potential for movement of sediment from the road to wetlands, floodplains, or streams. All exposed soil would be covered or otherwise temporarily stabilized during work suspension. Sediment trapping devices would be properly installed to hydrologically disconnect sites. Operations would resume when sediment control devices are in place and conditions allow all turbidity standards to be met.

- Upon completion of harvest, all existing skid trails utilized during this harvest activity within Riparian Reserves would be discontinuously sub-soiled, seeded, water-barred, mulched, and blocked (as described above for upland skid trails).

- Prior to winter rains, cable yarding corridors that are above or nearly perpendicular (approximately 60-90 degrees) to stream channels or hydrologically connected to streams via ditchlines, would be waterbarred and have slash placed over them to protect water quality.

- When utilizing existing landings that have the potential to release eroded fines into a stream or wet area, directly or via draws or ditchlines, silt fencing or other sediment control measures would be properly placed and maintained during use and periods of non-use, to keep eroded material onsite.

- Riparian skid road construction would not occur in Riparian Reserves, unless field verified EPZs are established. In such a case, skid road construction could occur outside the EPZ, within the remaining portion of the Riparian Reserve. These skid roads would be decommissioned during dry conditions.

- New skid trails would be scarified and winterized as necessary to prevent chronic erosion and would be intermittently rehabilitated in areas where the roots of leave trees would not be substantially affected.

- Expansions of existing landings in the Riparian Reserve would not occur unless field determined EPZs are established. Expansions of landings would not occur into the EPZ.

- All existing skid trails utilized for this harvest activity within the Riparian Reserve would be rehabilitated[6].

- Where new skid trail construction is necessary within the Riparian Reserve, new skid trails would either be 1) constructed and used during dry conditions and fully rehabilitated[7]; or 2) construction would be restricted to the driest time of the year (generally Aug 1st -Oct 15th, as determined by the Authorized Officer). Equipment would be required to walk on slash, and as necessary to prevent off-site erosion, skid trails would be scarified, seeded, mulched, slash cover placed, and waterbarred prior to October 15th of the harvest year.

- During construction, rehabilitation, and winterization of roads, temporary and existing routes, skid trails, and landings, runoff water would be diverted away from headwalls, slide areas, high landslide hazard locations or steep erodible fill soils.

Activity Fuels and Prescribed Fire

- Under-burning operations would be allowed to back into EPZs and riparian no-treatment areas; however, no hand pile ignition would occur in riparian no-treatment areas.

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7 Rehabilitated/Decommissioned areas would be discontinuously sub-soiled, seeded and mulched or have fine slash placed over, water-barred, and blocked. Sub-soiling would be implemented using a winged ripping device placed on bucket or pulled behind ground based equipment that is capable of sub-soiling the full width of the skid trail; rips would be no more than 36 inches apart and would be to a depth of 18 inches or to bedrock, whichever is shallower. All rehabilitation activities that utilize heavy equipment would be required to take place at same time as sub-soiling to prevent machinery from driving back over sub-soiled ground. Waterbar spacing and drainage angles would be based on the NWFP Standards and Guidelines erosion control measures for timber harvest which considers slope and soil series (RMP, p. 167). All rehabilitation would occur within 24 months of harvest, and during the dry season when soils at 4-6" no longer maintain form when compressed, and soils on the surface do not readily displace under pressure to form ribbons, tracks, or ruts.

- Handpile burning operations within the EPZ would not occur concurrently with the implementation of adjacent upslope cable and ground based yarding activities.

- Underburning would occur one season after handpile burning operations to ensure that ground vegetation capable of trapping erosion from yarding activities is onsite.

Hazmat

- Contractors must prepare a Spill Prevention, Control, and Countermeasure Plan for all hazardous substances to be used in the contract area, as directed by the Authorized Officer. Such plan would include identification of Purchaser's representatives responsible for supervising initial containment action for releases and subsequent cleanup.

- Such plans must comply with the State of Oregon DEQ OAR 340-142, Oil and Hazardous Materials Emergency Response Requirements.

- Mechanized equipment would be limited to chainsaws in Riparian Reserves unless field determined EPZs are established. In such a case, mechanized equipment beyond chainsaws could be used outside the EPZ, within the remaining portion of the Riparian Reserve.

- Hydraulic fluid and fuel lines on heavy mechanized equipment would be in proper working condition to minimize potential for leakage into streams. No re-fueling of heavy equipment would occur within 150 ft of streams or stream crossings. Absorbent materials would be required to be onsite to allow for immediate containment of any accidental spills.

- Refueling of chainsaws and heavy equipment would be done no closer than 150 ft of any stream or wet area. Spilled fuel and oil would be cleaned-up and would be disposed of at an approved disposal site.

- Fire suppression foam would not be used within 150 ft of streams and wetlands.

2.3.2.5 Special Status and Survey and Manage Plant Species

Federally-designated Endangered *Fritillaria gentneri* site(s) would be protected via the following:

Harvest Operations

- No harvest activity would occur within a minimum of 25 ft from the population boundary (a site, or the outer edge of a polygon encompassing the population).

- No tree or vegetation removal would occur within 75 ft of a botanical buffer (100 ft from the occurrence) by heavy equipment, skidders, yarders, etc. No tree falling would occur into or yarding through buffered sites.

- No tree planting would occur within 75 ft of the edge of the buffer (100 ft from

occurrence), so as to maintain edge and more open habitat.

- Anchor trees would not be located within known sites. This includes anchor trees on federal land requested by private landowners.

- Construction of new landings would be at least 300 ft from known sites. Use of an existing landing could occur if the location of the plant(s) is more than 100 ft away. Use of existing landings within 100 ft of a plant would not occur (*i.e.*, landings are a source for new noxious weed populations, and burning of landing slash piles often kills surrounding vegetation).

- Proposed logging road locations, including temporary routes, would be surveyed and populations would be protected by a minimum 100 ft buffer. Use of existing roads within 100 ft of a plant could occur.

Activity Fuels and Prescribed Fire

- Buffer sizes for Hazardous Fuel Reduction would be a minimum of 25 ft from the occurrence boundary.

- Manual slashing (chainsaws) and brushing through buffered sites could occur during the dormancy period (July through December). For *Fritillaria gentneri,* 40 percent combined canopy coverage of trees and shrubs would be retained. If the pre-treatment canopy cover is less than 40 percent, then treatment of the buffer would not occur. No mechanical equipment in buffers.

- Cut material would be piled outside of buffers. Piles for burning would be placed 25 ft outside of buffers.

- Mechanical thinning/brushing (e.g., tracked vehicles) could occur 100 ft from buffers and no vehicles or heavy equipment would occur within buffers. Hand treatment could occur within buffers, as previously described.
- Bureau Sensitive and Survey and Manage botanical species would be protected by the no treatment buffers in Table 5. The minimum buffer size is determined by habitat requirements and existing habitat conditions on a case-by-case basis.

Table 5: No treatment buffer for Botanical Species

Species	Common Name	Management Status	Buffer Distance around Botany Sites (feet)
Chaenotheca ferruginea	Needle lichen	Survey & Manage - Category B	5-100
Chaenotheca subroscida	Lemondrop whiskers	Survey & Manage - Category E	5-100
Camassia howellii	Howell's camas	Bureau Sensitive	5-100

Species	Common Name	Management Status	Buffer Distance around Botany Sites (feet)
Cypripedium fasciculatum	Clustered lady's slipper	Bureau Sensitive, Survey & Manage - Category C	5-100
Chlorogalum angustifolium	Narrowleaf soap plant	Bureau Sensitive	5-100
Leptogium teretiusculum	Shrubby vinyl lichen	Survey & Manage - Category E	5-100
Fritillaria gentneri	Gentner's fritillary	T/E (Endangered)	25-100
Rhizopogon truncatus	truffle	Bureau Sensitive, Survey & Manage - Category D	5-100

- Trees would be directionally felled away from all no disturbance buffers.

- Prescribed burns would only occur during cool, moist weather conditions in units that contain Special Status Species (See Table 5 for specific units).

2.3.2.5 Noxious Weeds

Harvest Operations

- To prevent the potential spread of noxious weeds into the Medford District BLM, the operator would be required to clean all logging, construction, chipping, grinding, shredding, rock crushing, and transportation equipment prior to entry on BLM lands. Cleaning shall be defined as removal of dirt, grease, plant parts, and material that may carry noxious weed seeds into BLM lands. Cleaning prior to entry onto BLM lands may be accomplished by using a pressure hose.

- Only equipment inspected by the BLM would be allowed to operate within BLM lands. All subsequent move-ins of equipment as described above shall be treated the same as the initial move-in.

- Prior to initial move-in of any equipment, and all subsequent move-ins, the operator would make the equipment available for BLM inspection at an agreed upon location off federal lands.

All Project Actions

- Noxious weeds within BLM lands would be surveyed and treated for noxious weeds as funding is available. Treatments would primarily consist of herbicide application, hand pulling, and mechanical cutting methods as analyzed in the Medford District Integrated Weed Management Plan and Environmental Assessment (USDI 1998).

- Seed and straw used for restoration, replanting of bare soil, and post treatment throughout the Planning Area would be native species and certified weed free to prevent the further spread of noxious weeds. All seeding would be contingent on seed availability.

2.3.2.6 Wildlife

For All Proposed Units

- Within proposed treatment areas, "leave islands" or "skips" would be retained for the benefit of spotted owl prey, songbirds, and other species. These patches would maintain habitat diversity, a variety of vegetative structure, and utilize unique landscape features in the Planning Area. Where present, landscape features, such as wildlife and botany buffers, hardwood areas, chinquapin patches, rocky outcrops, wet areas, and areas with large woodrat nests, would contribute to or serve as these leave areas. Approximately 10-15% of the proposed treatment areas would be left untreated. Untreated areas would be a minimum of ¼ to ½ acre in size.

- All snags greater than 16 inches dbh and stage 4 decay class or older (Hunter 1990) would be reserved from cutting unless they pose a safety hazard, in which case they would be left on the ground in the unit and a replacement standing tree would be identified for retention.

- Coarse woody debris (CWD) would be retained and protected from disturbance to the greatest extent possible during logging, burning and other project activities.

Northern Spotted Owl (Threatened)

Project Design Criteria included in the U.S. Fish and Wildlife Service's Biological Opinion (USFWS 2012b) to the Medford District BLM's Biological Assessment (BLM 2012) would be applied and incorporated into the design of the Jumping Bean Ecological Forestry Project (see below).

- Any of the following measures may be waived in a particular year if nesting or reproductive success surveys conducted according to the U.S. Fish and Wildlife Service (USFWS) - survey guidelines reveal that spotted owls are non-nesting or that no young are present that year. Waivers are valid only until March 1 of the following year. Previously known well established sites/activity centers are assumed occupied unless protocol surveys indicate otherwise.

  All Project Actions

  - Activities (such as tree felling, yarding, temporary route construction and re-construction, and hauling on roads not generally used by the public, prescribed fire, muffled blasting) that produce loud noises above ambient levels would not occur within specified distances (Table 6) of any documented or projected owl site between March 1 and June 30 (or until two weeks after the fledging period) – unless protocol surveys have determined the activity center to be not occupied, non-nesting, or failed in their nesting attempt. The distances may be shortened if significant topographical breaks

or blast blankets (or other devices) muffle sound traveling between the work location and nest sites.

- The action agency has the option to extend the restricted season until September 30 during the year of harvest, based on site-specific knowledge (such as a late or recycle nesting attempt) if project would cause a nesting spotted owl to flush. (See Table 6 for disturbance distance).

- The buffer distance to the prescribed area may be modified by the action agency biologist using topographic features or other site-specific information. Buffer distance for prescribed fire may be reduced if substantial smoke from prescribed fire would not enter the nest stand March 1 – June 30. The restricted area is calculated as a radius from the assumed nest site (point).

Table 6: Disturbance Distances from Various Activities for Spotted Owls

Activity	Buffer Distance around Owl Sites
Heavy Equipment (including non-blasting quarry operations)	105 feet
Chain saws	195 feet
Commercial Timber Harvest	0.25 miles
Prescribed fire/Activity fuel burning	0.25 miles

Bald Eagle

The following measures may be waived in a particular year if surveys indicate the site is unoccupied or nesting attempts failed or until 2 weeks after the young have fledged. Waivers are valid only until February 1 of the following year.

All Project Actions

- Activities that produce noise above ambient levels would not take place within ¼ mile of active nests/roosts where there is no line-of-sight or within ½ mile where there is line-of-sight between February 1 and August 15.

Raptors

All Project Actions

- Protect additional raptor species if located and apply the appropriate buffers and seasonal restrictions (distance and season varies by species from ¼ - ½ mile).

2.3.2.7 Air Quality / Smoke Management

Activity Fuels and Prescribed Fire

- Local residents would be advised of prescribed burning prior to seasonal burning through news releases.

- Prescribed burning would occur under atmospheric conditions that allow for the mixing of air to lessen the impact on air quality. All prescribed burning would be managed in a manner consistent with the requirements of the Oregon Smoke Management Plan administered by the Oregon Department of Forestry and the regulations established by the Air Quality Division of the Oregon Department of Environmental Quality.

- Burning of slash piles would occur after a sufficient period of curing (generally over a year) to ensure desired consumption of material and after a period of adequate seasonal moisture to minimize risk of fire escape. Smoke clearance(s) would be obtained prior to ignition to minimize impacts on air quality.

2.3.2.8 Cultural Resources

All Project Actions

- Cultural resource surveys in Activity Area were conducted and site specific protection measures or specific PDFs would be implemented to preserve the integrity of significant cultural resources. These resources are also referred to as Historic Properties in cultural resource protection laws and regulations.

- If cultural resources are found during project implementation the project would be redesigned to protect the cultural resource values present, or evaluation or mitigation procedures would be implemented based on recommendations from the Resource Area Archaeologist, with input from local federally recognized Tribes, and concurrence from the Field Manager and State Historic Preservation Office.

2.3.2.9 Recreation

Harvest Operations

- Treads of the existing BLM recognized recreation trails would be kept clear of logging slash and hand piles. Trees would be directionally felled away from any recreation signs or infrastructure encountered.

- Usage of recreation areas and trailheads for operation, parking or staging of equipment should be avoided.

- No mechanized equipment or vehicles would be permitted to cross these recreation trails or mining channels. Usage of recreation areas and trailheads for operation, parking or staging of equipment should be avoided.

- If unauthorized off-highway vehicle (OHV) use is identified in areas utilizing skid trails for forest product removal, vegetation would be pulled back over skid trails and the skid trail blocked upon project completion to minimize OHV use of the area.

Activity Fuels and Prescribed Fire

- If OHV use of firelines is identified during project implementation, vegetation would be pulled back over a minimum of the first 100 ft from roads (depending upon terrain) upon completion of prescribed burning.

- To minimize use of existing unauthorized OHV routes, burn piles, slash, and debris would be placed on these routes, where practicable.

- Fireline construction would not occur through recreational trails to protect the integrity of the trails.

Chapter 3.0 - Affected Environment and Environmental Consequences

3.1 Introduction

In accordance with law, regulation, executive order, policy and direction an interdisciplinary team reviewed the elements of the human environment to determine if they would be affected by the alternatives described in Chapter 2.0. Those elements of the human environment that were determined to be affected define the scope of environmental concern (**see Environmental Elements in Appendix 1 for full list of elements considered**).

Affected Environment
The Affected Environment portion of this chapter describes the current conditions in the Jumping Bean Ecological Forestry Activity Area and Planning Area. The relevant resources that could be potentially impacted are: fire hazard, vegetation resources, soil productivity and compaction, soil erosion and sensitive soils, water quality and stream sedimentation, and the northern spotted owl and its critical Habitat.

Environmental Effects
The Environmental Effects portion of this chapter provides the analytical basis for the comparisons of the alternatives (40 CFR § 1502.16) and the reasonably foreseeable environmental consequences to the human environment that each alternative considered in detail would have on the relevant resources. Impacts can be beneficial, neutral or detrimental. This analysis considers the direct impacts (effects caused by the action and occurring at the same place and time), indirect impacts (effects caused by the action but occurring later in time and farther removed in distance but are reasonably foreseeable) and cumulative impacts (effects caused by the action when added to other past, present and reasonably foreseeable future actions on all land ownerships). The temporal and spatial scales used in this analysis may vary depending on the resource being affected.

Cumulative Effects
Under 43 CFR § 46.115, it states that when considering cumulative effects analysis, it must analyze the effects in accordance with relevant guidance issued by the Council on Environmental Quality (CEQ). As the CEQ, in guidance issued on June 24, 2005, points out, the "environmental analysis required under NEPA is forward-looking," and review of past actions is required only "to the extent that this review informs agency decision-making regarding the proposed action." Use of information on the effects on past action may be useful in two ways according to the CEQ guidance. One is for consideration of the Proposed Action's cumulative effects, and secondly as a basis for identifying the Proposed Action's direct and indirect effects.

The CEQ stated in this guidance that "[g]enerally, agencies can conduct an adequate cumulative effects analysis by focusing on the current aggregate effects of past actions without delving into the historical details of individual past actions." This is because a description of the current state of the environment inherently includes the effects of past actions. The CEQ guidance specifies that the "CEQ regulations do not require the

consideration of the individual effects of all past actions to determine the present effects of past actions."

Information on the current environmental condition is more comprehensive and more accurate for establishing a useful starting point for a cumulative effects analysis, than attempting to establish such a starting point by adding up the described effects of individual past actions to some environmental baseline condition in the past that, unlike current conditions, can no longer be verified by direct examination.

The second area in which the CEQ guidance states that information on past actions may be useful is in "illuminating or predicting the direct and indirect effects of a proposed action." The usefulness of such information is limited by the fact that it is anecdotal only, and extrapolation of data from such singular experiences is not generally accepted as a reliable predictor of effects.

Scoping for this project did not identify any need to exhaustively list individual past actions or analyze, compare, or describe the environmental effects of individual past actions in order to complete an analysis which would be useful for illuminating or predicting the effects of the Proposed Action.

When encountering a gap in information, the question implicit in the Council on Environmental Quality regulations on incomplete and unavailable information was posed: is this information "essential to a reasoned choice among the alternatives?" (40 CFR §1502.22[a]). While additional information would often add precision to estimates or better specify a relationship, the basic data and central relationships are sufficiently well established that any new information would not likely reverse or nullify understood relationships. Although new information would be welcome, no missing information was determined as essential for the decision maker to make a reasoned choice.

The Birdseye Jones Timber Sale is currently an un-awarded timber sale within the Jumping Bean Ecological Forestry Project Planning Area. This sale cannot be awarded until a new U.S. Fish and Wildlife Service Biological Opinion and other natural resource surveys are completed. As such, this project is not considered a foreseeable action and it would not be expected that the Birdseye Jones Timber Sale would occur concurrently with the Jumping Bean Ecological Forestry Project. There are no Birdseye Jones Timber Sale units that overlap any Jumping Bean Ecological Forestry Project units.

The Lower Graves Integrated Vegetation Management Project Planning Area is located outside of the Jumping Bean Ecological Forestry Project Planning Area; therefore, it is outside the scale of analysis for cumulative effects.

There are two foreseeable projects in the Jumping Bean Ecological Forestry Project Planning cumulative effects analysis area: the Shorthorn Gulch Land Parcel Sale, and 308 acres of non-commercial silvicultural treatments under the 2012 Silviculture Practices-Reforestation, Young Stand Management, and Forest Condition Restoration Treatments (FY12-FY17). These projects were selected as they have formal proposals developed and are anticipated to be highly probable for implementation in the next 2-3 years. The

cumulative effects of these projects with the Jumping Bean Ecological Forestry Project are analyzed in each of the affected resource Sections of Chapter 3 below.

3.2 Fire Hazard

3.2.1 Background Information on Fire Hazard

Fire is the primary natural disturbance agent in the Klamath Siskiyou province forests, influencing vegetation structure, species composition, soil properties, nutrient cycling, hydrology and other ecosystem processes (Agee 1993). Forests with high stem density and fuel loading combined with extreme fire weather conditions has led to severe and large wildfires that have put a number of important values at risk. Homes in the path of a wildfire are perhaps the most immediately recognized value; however these wildfires also put numerous other human and ecological values at risk such as power grids, drinking water supplies, firefighter safety, critical habitat, soil productivity, and air quality (Graham et al., 2004, p.43).

3.2.2 Affected Environment for Fire Hazard

The Jumping Bean Ecological Forestry Project Planning Area is located in three fifth field watersheds. The Planning Area boundary is defined by ridgelines, creeks, and road systems which serve as strategic locations for holding wildland fires. In the event of a wildfire, these strategic locations may be utilized to contain a fire within the Planning Area, or conversely, to prevent a fire from entering it. As such, the Jumping Bean Ecological Forestry Project Planning Area boundary lends itself as a logical scale to conduct direct, indirect, and cumulative fire hazard effects analysis. The stands in the Planning Area are overstocked and have tree high per acre densities. Overstocked stands have a greater potential for severe, stand-replacing wildfires. The proposed treatment stands represent timber litter and timber-understory fuels types. As fuel loadings increase in these fuel types, resultant fire behavior also increases.

Fire Regimes

Fire regime refers to the combination of fire frequency, predictability, intensity, seasonality, and extent of characteristic of fire in an ecosystem. A natural fire regime is a general classification of the role fire would play across a landscape in the absence of modern human mechanical intervention, but including the influence of aboriginal burning (Agee 1993). Coarse scale definitions for natural (historical) fire regimes have been developed by Hardy et al. (2001) and Schmidt et al. (2002) and interpreted for fire and fuels management by Hann and Bunnell (2001). As scale of application becomes finer these five classes may be defined with more detail, or any one class may be split into finer classes, but the hierarchy to the coarse scale definitions should be retained. According to LANDFIRE data the Jumping Bean Ecological Forestry Project Planning Area includes 94 percent in Fire Regime 1, 4 percent in Fire Regime 3, and 2 percent is a mixture of Fire Regimes 2, 4, barren land, and water (see Table 7 below).

Table 7: Fire Regime, Fire Return Interval and Fire Severity

Fire Regime	Fire Return Interval	Fire Severity	Vegetative Examples
I	0-35 years	Low	Ponderosa pine, other long needle pine species, and dry site Douglas-fir
II	0-35 years	Stand Replacement	Drier grassland types, tall grass prairie, and some Pacific chaparral & southern rough ecosystems
III	35-100 years	Mixed	Interior dry site shrub communities such as sagebrush and chaparral ecosystems
IV	35-100 years	Stand Replacement	Lodge pole pine and jack pine
V	Over 200 years	Stand Replacement	Temperate rain forest, boreal forest, and high elevation conifer species

USDA/USDI 2003

Fire Regime Condition Class

Fire Regime Condition Class (FRCC) has become a measure of ecological departure used by the BLM, as well as other federal agencies, to describe resource conditions. This measure involves two pieces of information: (1) historical fire regime, and (2) the Condition Class. Condition Classes classify the amount of departure from the natural regime (Hann and Bunnell 2001). Coarse-scale FRCC classes have been defined and mapped by Hardy et al. (2001) and Schmidt et al. (2001) (FRCC). They include three condition classes for each fire regime. The classification is based on a relative measure describing the degree of departure from the historical natural fire regime.

Condition Class 1 – (31% of the Jumping Bean Ecological Forestry Project Planning Area): Within the natural (historical) range of variability of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances.

Condition Class 2 – (27% of the Jumping Bean Ecological Forestry Project Planning Area): Moderate departure from the natural (historical) regime of vegetation characteristics: fuel composition; fire frequency, severity and pattern; and other associated disturbances.

Condition Class 3 – (42% of the Jumping Bean Ecological Forestry Project Planning Area): High departure from the natural (historical) regime of vegetation characteristics; fuel composition; fire frequency, severity and pattern; and other associated disturbances.

Fire Hazard

Fire hazard is a fuel complex, defined by volume, type condition, arrangement, and location, that determines the degree of ease of ignition and resistance to control. This fuel complex determines the ability of fire spread once ignition has occurred.

Fire hazard ratings were developed for the Jumping Bean Ecological Forestry Project Planning Area utilizing data from the Josephine County Risk Assessment. An estimated 43% of the project unit acres rate as high hazard, 40% rate as a moderate hazard, and

17% low hazard. The high and moderate hazard acres account for 83% of the Planning Area acres.

The entire Jumping Bean Ecological Forestry Project Planning Area lies within the Wildland-Urban Interface (WUI) in proximity to the communities of Grants Pass and Merlin. WUI is the area where houses meet or intermingle with undeveloped wildland vegetation. Homes in close proximity to the BLM landholdings may become threatened by wildfire due to heavier fuel loading that may lead to uncharacteristic fire behavior (high intensity and severity).

Fire behavior dictates which fire suppression strategy may be effectively employed, and therefore the extent to which a fire may grow and the subsequent damage it may cause. Because fire behavior is critical in fire suppression strategy selection, it serves as the threshold used for this analysis. The unit of measure for determining the threshold is considered in terms of flame length. Typically flame lengths less than four feet can be managed by fire suppression personnel using direct attack on the fire edge. Flame lengths greater than four feet generally require firefighting equipment and utilize an indirect attack strategy, where personnel back off to a defensible position away from the fires edge.

Fuel Models

Fire behavior fuel models are grouped by fire-carrying fuel type. Fuels models are used to predict the potential behavior and effects of wildland fire. The majority of the Activity Area can be identified within the timber understory (TU) and the timber litter (TL) fuel models. Table 8 shows the typical flame lengths associated with each of these fuel models during fire season weather conditions given a 5 mph wind.

Table 8: Fire Behavior Fuel Models with Flame Lengths

Fire Behavior Fuel Model	**Fuel Model Group**	**Flame Length** (in feet)
GS2	Grass Shrub	4-6
TL3	Timber Litter	1-2
TL6	Timber Litter	2-4
TU2	Timber Understory	3-5
TU5	Timber Understory	7-9
SB1	Slash/Blowdown	2-4
SB2	Slash/Blowdown	5-8

(Scott, Joe and Robert Burgan 2005. USDA, GTR-153)

3.2.3 Environmental Consequences for Fire Hazard

3.2.3.1 Alternative 1 (No Action) - Effects on Fire Hazard

The existing surface, ladder, and canopy fuels would not be treated under this alternative. Fuels would continue to accumulate on the forest floor. Stands would remain in their current fuel type and fuel loading and fire behavior potential would continue to increase. The FRCC departure would continue to trend toward condition classes 2 and 3. In the short-term, 1-2 years, there would be no increase in fire hazard because no vegetation would be cut under this alternative that would create landing, machine, or hand piles.

Fire suppression activities would continue on Federal and non-Federal lands. The BLM has a master cooperative fire protection agreement with Oregon Department of Forestry (ODF). This agreement gives ODF the responsibility for fire protection on all lands within the Planning Area. The agreement directs ODF to take immediate action to control and suppress all fires. Their primary objective is to minimize total acres burned while providing for firefighter safety. The agreement requires ODF to control 94% of all fires before they exceed 10 acres.

Treatments on private property, around structures and along driveways would likely continue. As a result of defensible space treatments around structures, driveways, and along possible escape routes, the risk of both structural and human losses from wildfires would decrease.

In the long-term (> 2 years), the fuel hazard would increase as vegetation continues to develop. Surface fuels would increase due to tree mortality in dense stands as higher levels of insect and disease mortality are expected. The Planning Area would remain in moderate to high fire hazard, resulting in a higher potential of increased fire behavior if a wildfire occurs. The potential for increased fire behavior would create a greater risk for private land, homes, and resources in the Jumping Bean Ecological Forestry Project Planning Area. The departure from the historical fire regime would continue to trend toward condition classes 2 and 3.

3.2.3.2 Alternative 2 (Proposed Action) - Direct and Indirect Effects on Fire Hazard

The proposed forest management actions for Alternative 2 are Variable Density Thinning, Density Management, and Hazardous Fuel Reduction. Proposed fuels treatments under this alternative include understory thinning, lop and scatter, pile and burn, chipping, prescribed underburn, and/or biomass removal.

Variable Density Thinning would reduce stand basal area by removing mostly small and medium sized trees. Treatments would reduce ladder fuels and the risk to older trees from wildfire and competition, while favoring more fire and drought tolerant tree species. Thinning treatments would reduce torching and crowning potential by increasing canopy base heights. There would be a short term increase (1-2 years) in fire hazard from slash piled within units and at landing sites. These units could have a reduction in potential fire behavior following activity slash treatments, which would move units from a slash fuel model into a timber litter model.

Density Management would reduce stocking levels throughout the stand and promote growth and structural development of residual trees. Density management may be completed in conjunction with Hazardous Fuels Reduction. The proposed Density Management would be designed to retain key structural elements (e.g., large trees, snags, coarse woody debris, hardwoods, higher canopy cover) while reducing overly dense stands and protecting habitat from stand replacing fire.

The majority of cut vegetation would be extracted from the Variable Density Thin and Density Management units. Cut vegetation extracted from each unit would be piled at landing sites. If biomass is not extracted from these piles, they would be burned. The remaining slash in units may cause a shift from a timber type fuel model to a slash/blowdown fuel model, until the fuels are treated, typically within 1-2 years.

Following forest management activities and prior to slash disposal, fire behavior potential would increase due to increased surface fuels. The cut vegetation may be recommended for lop & scatter in units to prevent concentrations of slash and to arrange the material in a discontinuous pattern. In cases where post-harvest field review indicates a shift of the fuel model and an increase in flame length, the recommended treatment may be to pile and burn and/or chip the slash to decrease the fire hazard. This treatment may be followed up with subsequent maintenance underburns.

The majority of slash in Hazardous Fuel Reduction treatments, which could be in conjunction with Density Management, would be treated by biomass removal and/or hand pile and burn treatments. Once the cut vegetation is removed and/or treated, subsequent underburning may take place in these units to prevent future increases in fuel loading. Underburning would typically occur within 5-7 years of fuels treatments. The proposed fuels treatments would reduce fire behavior, by reducing ladder and surface fuels. Empirical evidence supports the concept that forests treated with fire-hazard reduction objectives burn with less severity than adjacent untreated areas (Omi, and Martinson, 2002; Pollet and Omi, 2002). Following slash treatments, units would move from a timber understory fuel model into a timber litter model, which would reduce potential fire behavior.

The FRCC in the proposed Variable Density Thin units would remain unchanged following harvest with moderate to high departure in natural vegetation characteristics and fuel loading. Variable Density Thin, Density Management, and Hazardous Fuel Reduction treatments that include thinning of small diameter trees and removal of slash would maintain or shift towards FRCC2. Follow up prescribed fire underburns would gradually move units toward FRCC1.

3.2.3.4 Alternative 2 (Proposed Action) - Cumulative Effects on Fire Hazard

Alternative 2 would restore, maintain and enhance fire-adapted ecosystems by reducing fire hazard by treating strategic locations within the landscape. In the event of a wildfire, these strategic locations may be utilized for fire suppression activities to contain a fire within the Planning Area, or conversely, to prevent a fire from entering it.

There are two foreseeable federal projects in the Jumping Bean Ecological Forestry Project Planning cumulative effects analysis area: the Shorthorn Gulch Land Parcel Sale, and 308 acres of non-commercial silvicultural treatments under the 2012 Silviculture Practices- Reforestation, Young Stand Management, and Forest Condition Restoration Treatments (FY12-FY17).

The Shorthorn Gulch Land Parcel Sale is proposed within the Jumping Bean Ecological Forestry Project in T34S-R5W-Section 30. This potential land sale of 0.66 acres to resolve an inadvertent trespass is adjacent to Jumping Bean's Unit 30-4. If this land is sold, it would no longer be within the jurisdiction of BLM's management, including fuels management.

The potential 308 acres of non-commercial silvicultural treatments include 213 acres of Pre-commercial thinning and 95 acres of pruning would be outside of the Jumping Bean Ecological Forestry Project Activity Area, but within the Planning Area boundary.

Ongoing hazardous fuel reduction projects are being implemented on private land with assistance provided by ODF, private contractors, and private landowners in the Jumping Bean Ecological Forestry Project Planning Area.

FRCC would remain unchanged, or trend toward FRCC1 where understory and prescribed fire treatments occur. Periodic maintenance treatments involving thinning and prescribed underburns would be needed to maintain the desired condition class.

Fire hazard for Alternative 2 would be reduced in Variable Density Thinning, Density Management, and Hazardous Fuel Reduction treatment units. The fuels treatments on private lands would also result in reduced fire hazard. Treatment units would result in a cumulative short term increase in fire hazard of 1-2 years due to the presence of slash until the time it is treated and/or partially decomposes. Once the slash is treated, units could experience a decrease in fire hazard for 5 to 15 years. Treatments completed under this project would decrease fire hazard as they shift stands from timber understory to timber litter fuel models. These treatments would also increase tactical fire suppression opportunities within treatment units due to a decrease in fire intensity and severity.

A long term beneficial effect on fire hazard in the Planning Area from these projects would be that the treated units could be utilized as a strategic holding point for fire suppression personnel. Fire hazard within these project areas is and would reduce crown density and hazardous fuels.

The cumulative beneficial effects of the Jumping Bean Ecological Forestry Project are measured in terms of fire hazard. Current hazardous fuels reduction projects that are in progress were designed to reduce the existing fire hazard by removing some of the surface, ladder fuels and crown density. By treating the understory vegetation, potential fire behavior is reduced to surface fires and passive crown fires. The Hazardous Fuels Reduction, Density Management, and Variable Density Thinning treatments proposed under Alternative 2 are designed to accomplish the same objective. Treatments completed under this project would affect the fuel characteristics at the surface, mid and

upper canopies altering the current trend of large scale high severity fire events by disrupting fuel continuity, uniformity and structure by reducing potential fire behavior.

The Shorthorn Gulch Land Parcel Sale and 308 acres of Pre-commercial Thinning treatments under the 2012 Silviculture Practices- Reforestation, Young Stand Management, and Forest Condition Restoration Treatments (FY12-FY17) combined with the proposed treatment acres with Alternative 2 would result in a cumulative short term increase six months to 2 years in fire hazard due to the presence of slash or until the time it is treated and/or partially decomposed. A long term beneficial effect is anticipated in terms of decreased fire hazard for the next 10 to 20 years.

3.3 Vegetation Resources

3.3.1 Affected Environment for Vegetation Resources

The scale of analysis for vegetation resources is per proposed unit, as it is the affected area of vegetation from the Jumping Bean Ecological Forestry Project to support tree establishment and growth on BLM managed land. Where activities are proposed for this project is collectively referred to as the Activity Area.

Disturbance Pattern/Stand Development

Fire appears to have been the most dominant, frequent disturbance in the Jumpoff Joe Watershed and a major determinant of biological diversity. The pre-settlement fire regime (pre-1850) was one of generally frequent, low severity fires which keep sites open so that they are less likely to burn intensely even under severe fire weather (USDI 1998). This pattern became disrupted with the onset of fire suppression that has occurred throughout southwest Oregon and the American West for the last century. Other modifications to sites came from Euro-Americans that included clearing for settlement and agriculture, human development (homes, buildings, roads, etc.), timber harvesting, mining, and grazing (USDI 1998).

The shift from frequent to infrequent fires has altered the fire regime from low severity to high severity. The last major event occurred in 1988 with the Walker Mountain Fire that burned more than 2,000 acres in high severity. Low intensity fires are now becoming high intensity stand replacement events normally associated with infrequent high-severity fire regimes such as those in the northern Cascades or Olympic Mountains. The Jumpoff Joe Watershed exhibits a condition predisposed to large-scale, destructive, stand-replacing events that damage life, property, and resources. The watershed as a whole has a high level of risk of human caused ignition and lightning occurrences in the watershed have been high (USDI 1998). The potential for a large fire is high to extremely high for this watershed due to the buildup of live and dead fuels, overstocking of conifers and hardwoods, the presence of less fire resistant species which have invaded in the absence of frequent fire occurrence, and failure to treat activity fuels created during management practices (USDI 1998).

Species Composition

The Jumpoff Joe Creek Watershed Analysis (USDI 1998) notes that fire suppression has resulted in overall decreases in ponderosa pine cover, sugar pine, and a decline in white oak prominence, whereas Douglas-fir and white fir occupancy has increased. Douglas-fir is the most common tree species in the project area and in southwestern Oregon. This species is self-pruning, often sheds its needles and tends to increase the rate of fuel buildup and fuel drying (Atzet and Wheeler 1982). This disruption of the natural historical disturbance pattern has resulted in unsustainable densities of tree and shrub composition and a shift of Douglas-fir onto what were formerly ponderosa pine and white oak sites (USDI 1998). Douglas-fir is also encroaching upon the edges of meadows and oak woodlands. Douglas-fir encroachment has made significant inroads onto these sites oftentimes replacing them altogether. Douglas-fir mortality within these sites demonstrates that Douglas-fir is both poorly adapted and at unsustainable densities. Douglas-fir competition is widespread throughout the Activity Area and is most evident in T34S-R5W-Sec.19, 20, 21, 28, 29, 30 and T35S-R5W-Sec.4, 5, 8, 9, 20, 21, and 33.

Stand Density

Stand density is a measure of competition (Hall 2003). It occurs whenever several organisms require the same things in the same environment, increasing in intensity as demand exceeds supply (Hall 2003; Oliver and Larson, 1996, p.36-37). The more trees that exist on a site, the fewer resources are available to sustain them. Hall (2003) points out that a site can be fully occupied at less than 100% canopy cover because of root occupancy.

Relative Density (RD) is a measure of a stand's occupied density compared to a theoretical maximum density. RD measures the number of trees per acre independent of site qualities such as light, water, and nutrients and serves as a measure of competition for growing space. Drew and Flewelling (1979) identified the zone of imminent competition mortality occurring between 0.55 and 1.0. A RD of 1.00 means that trees on the site occupy the full growing space with mortality levels equaling stand growth. Generally, stands where thinning is possible should not be allowed to exceed RD 0.50 (Drew and Flewelling, 1979). Briegleb (1952) stated that the optimum densities for most combinations of factors will lie between 0.34 and 0.55 RD.

Nearly 98% of the 42 stands inventoried have relative density indices between 0.55 and 1.00, which bounds the zone of imminent competition-mortality (Drew & Flewelling 1979). Only one stand was found below 0.55 RD. Relative densities of stands throughout the Activity Area are high. This is primarily due to the lack of natural or human-caused disturbance. The overall average relative density for the Jumping Bean Ecological Forestry Project Activity Area is 0.80 indicating that ingrowth of trees and lack of disturbance mechanisms to control competition has caused the Activity Area to remain deep within the upper zone of imminent competition induced suppression and mortality.

Diameter Growth, Vigor, and Resiliency

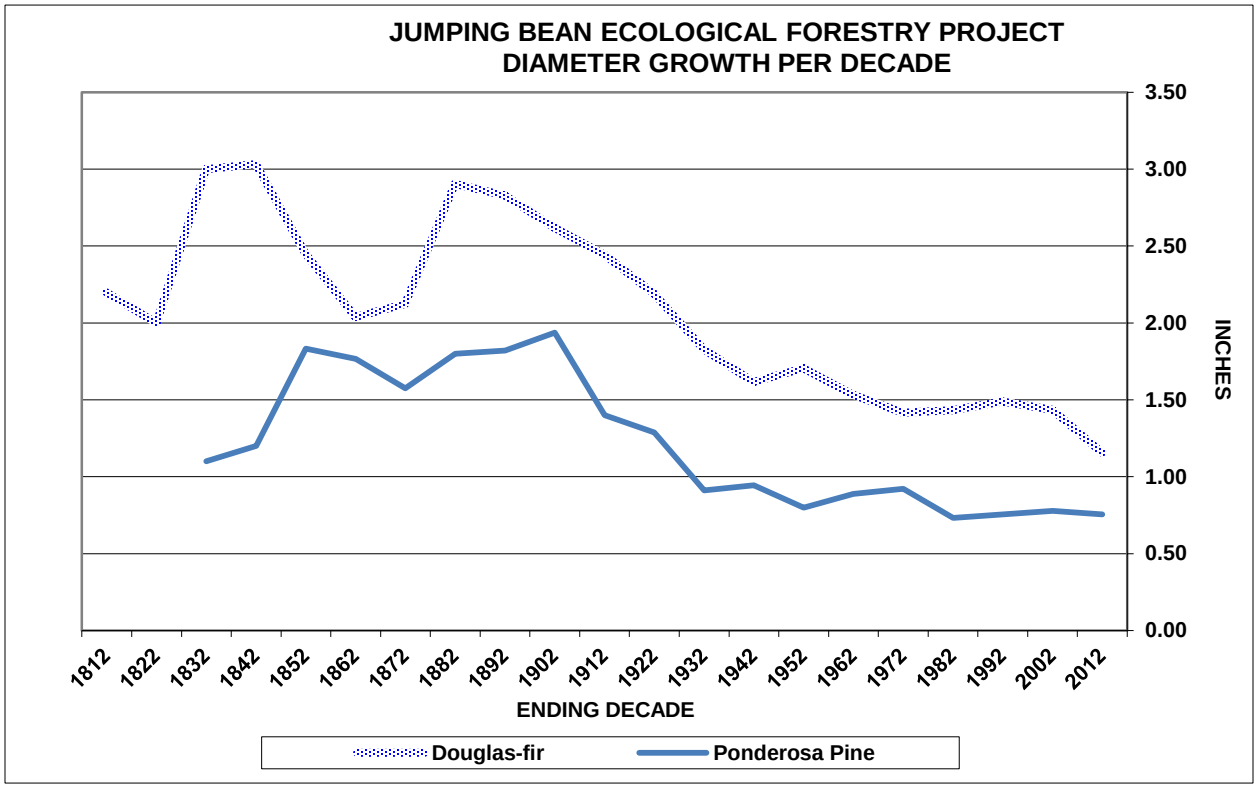
Diameter growth is considered a reliable indicator of a tree's environmental growth potential; low vigor trees are under some form of physiological stress and their vigor can improve with additional growing space.

Plant ecologist, Fred Hall (2003) writes in his Growth Basal Area Handbook that:

- stand density is the major factor affecting rate of diameter growth in stands unaffected by insects and diseases;
- the rate of diameter growth reflects competition and productivity;
- a decreasing rate of diameter growth is directly related to increasing competition/stand density;
- rate of diameter growth reflects competition independent of crown closure (e.g., a 30% crown closure whose dominants are growing 0.8 inches per decade is assumed to be under a similar degree of competition as a stand at 100% crown closure with dominants growing at the same rate);
- spacing and thinning studies suggest that diameter growth of 1.0 inches per decade indicates highly significant intertree competition than does 3.0 inches per decade;
- competition is not only between trees, but shrubs and herbs can also reduce tree diameter growth;
- diameter growth decreases as basal area increases; and
- a site can be fully occupied at less than 100% canopy cover.

Figure 9 illustrates the 10-year growth rate of Douglas-fir and ponderosa pine. Core samples from 248 trees were collected in stand exam surveys and other BLM surveys that involved the use of an increment borer to extract tree cores to assess growth, vigor, and age. The current growth rate of Douglas-fir is 1.16 inches per decade signifying that the species is under relatively heavy competition. In comparison, ponderosa pine is only growing 0.76 inches per decade. At least 1.5 inches of tree diameter growth per decade is required to decrease the risk of bark beetle attack (USDA 1998) and is the threshold for inter-tree competition for ponderosa pine (Cochran 1992).

Table 9: Douglas-Fir 10 Year Incremental Diameter Growth



In Douglas-fir forests, Fettig et al., (2007) reported that factors contributing to infestation levels consistently include poor growth and stand density. Stands on south and east aspects below 3,500 foot elevations are particularly vulnerable to bark beetles when their densities are high (USDA 1998). In southwest Oregon droughty sites and those below 3,500 feet elevation are associated with Douglas-fir mortality from the flat headed fir borer (Shaw et al., 2009). The percentage of BLM land in the Jumping Bean Ecological Forestry Project Planning Area below 3,500 feet elevation is 77%.

Larsson and others (1983) point out that ponderosa pine vigor decreases as stand density increases and suggests that comparatively few beetles are needed to kill low vigor trees. As a general rule, stands where growth rates are greater than or equal to 1.5 inches of diameter growth per decade or with less than 150 square feet of basal area per acre are less prone to pine bark beetle attack.

3.3.2 Environmental Consequences for Vegetation Resources

3.3.2.1 Alternative 1 (No Action) - Effects on Vegetation Resources

Ecological processes would remain displaced without disturbance. Stand densities would continue to rise and early seral species, particularly ponderosa pine, white oak, and black oak, would continue to decline. No action would allow the relative density index of forest stands to climb above the overall average of 0.80 with continued decline in species and biological diversity. Stand densities would continue on its current trajectory and

remain overpopulated. Fire suppression is expected to continue, thereby restricting the regeneration of ponderosa pine and reducing the survival of black oak and white oak.

In the absence of fire or active management tree densities would continue to increase to unprecedented levels. Natural disturbances could not be reliable tools for density control as their impacts are expected to remain askew from historical levels of less intense, small sizes to large, stand replacing events that are extremely costly to control, pose dangers to the public, and a substantial loss of valuable natural resources. These impacts may be compounded with changing climates. Future silvicultural options diminish when severe stand mortality results after a stand replacing wildfire.

Old trees >150 years in age would remain threatened by the potential for fire among fuels built up beneath their canopies. Old-growth ponderosa pine, incense cedar, sugar pine, and Douglas-fir old-growth trees, with seedlings through poles within their dripline, would continue to die from competition for water. With individual large tree mortality, forest stand structure would very slowly and gradually shift to the understory reinitiation stage since resources previously used by the dead tree are reallocated to new or surviving vegetation. Trees usually develop large crowns, large diameter limbs, and deep fissures in the bark. Deep fissures in the bark are characteristic of large diameter Douglas-fir trees in old growth stands. Maguire, et al., (1991) found that large branches develop only on widely spaced trees or on trees adjacent to gaps or openings. No action would inhibit this development as vegetation continues to populate and occupy available growing space.

Individual tree mortality is expected to increase and species biodiversity is expected to decrease. Shade intolerant pine and oak would continue to decline in number from competition with encroaching shade tolerant white fir and Douglas-fir. In dry forests that have excluded fire, ingrowth (where it is still possible) would perpetuate a cycle of growth and mortality until the next disturbance.

The Medford District RMP describes the Forest condition (Forest Health) Resource Condition Objective that requires management emphasis on treatments and harvests that restore stand condition and ecosystem productivity. It directs management actions to include density management and understory reduction operations that reduce competition, increased use of understory prescribed fire, and fertilization No action contradicts the Medford District Resource Management Plan forest condition objectives in regard to forest health.

The District would forgo potential stand growth and timber yield by leaving high stand densities on these General Forest – Matrix lands for extended periods. Stands with RD values within the zone of imminent competition mortality are also at greater risk of fire, insect or disease infestations, increased competition-induced mortality, and volume losses (Waring and Pittman, 1980). The Activity Area's average relative density of 0.80 indicates imminent competition mortality. Fire hazard would increase with the abundance of dead vegetation and ladder fuels, and would build to maximum levels.

Summary

Short term effects of no treatment may result in increased competition for increasingly scarce soil moisture and nutrients as shade tolerant stems continue to proliferate and climates are expected to change. Vigorous stands are resilient to environmental changes. Very little diameter growth is expected in a no treatment scenario, yet some limited height growth may continue depending on the site and current stand condition.

In the no treatment scenario, as well as within skips of treated scenarios, the effects of long term limitations to growing space would be more pronounced. No treatment would see a decline in additional germination as nutrients and soil moisture become tied up by stronger competitors. A no treatment scenario would see less light and subsequently, less growing space with increasing crown closure. The long term result would likely exhibit a stand with widespread poor vigor, low insect and disease resistance, and poor resilience to changing climates. On the driest sites and lowest elevations full site occupancy would occur before crown closure due to moisture and nutrient limitations. Moisture and nutrient limitations on such sites would occur before sunlight limitations become evident (i.e., crown closure).

3.3.2.2 Alternative 2 (Proposed Action) - Direct and Indirect Effects on Vegetation Resources

Tables 10 and 11 describe the short-term and long-term effects of proposed Jumping Bean Ecological Forestry Project treatments compared to no treatment. Projection of short-term effects has a higher degree of certainty compared to the projection of long-term effects. Stand condition and stand characteristics 11-100^{+} years into the future are highly dependent upon uncontrollable variables such as: climate stability or change, extreme weather, wildfire, future management direction, societal pressures, available funding for follow-up treatments, and random events.

Commercial harvesting of conifers and understory reduction is proposed in mixed conifer forest stands, oak woodlands, and shrublands. The overall design aims to meet multiple land management objectives across a broad spectrum. By integrating vegetation management prescriptions, the Proposed Action aims to restore dry forest components across the landscape and provide for an intermediate harvest of merchantable size trees for commercial timber products while maintaining northern spotted owl habitat. This strategy aims to restore the landscape to a resilient and vigorous condition, resist the detrimental effects of a changing climate, restore plant communities to their site potential, and improve their tolerance to threats from drought, fire, and insects and diseases. Prescriptions are designed to enhance the growth, health, and vigor of the remaining trees, and diversify the species composition and stand structure.

Oliver and Larson (1996, p.141-142, 38, 167) point out that there is little evidence to suggest that human manipulation causes unalterable changes to the natural processes of forests since “human activities basically mimic different aspects of natural disturbances” and that forest management “does not alter a ‘natural direction’ of forest development, since no single obligatory direction occurs.”

Management intervention in the form of stocking control would reduce competition by increasing growing space, water and nutrient availability, sunlight penetration, and photosynthesis rates, thereby increasing diameter growth, vigor, and resistance to insects and disease. DeMars and Roettgering (1982) suggest that by maintaining thrifty, vigorous trees or stands, land managers can prevent susceptibility of hosts to insect damage. Larsson and others (1983) add that the susceptibility of trees to damage by bark beetles can be mitigated by stocking control which is tied closely together with tree vigor. Altogether, site disturbance such as fire and thinning improves tree vigor.

Dominant ponderosa pine markedly responds when enough growing space becomes available from the removal of adjacent subordinate trees (Cochran 1992). A study of ponderosa pine reaction to competition in a mixed conifer site in the Sierra Nevada's (Burns and Honkala, 1990) revealed that "even beneath a light overstory stand casting 47 percent shade, ponderosa pine saplings grew only about half as rapidly as their associates (Douglas-fir, sugar pine, white fir, and incense-cedar) and about half of that expected for fully sunlit pines." DeMars and Roettgering (1982) recommend that "reducing stand stocking to 55 to 70 percent of the basal area needed for full site utilization will relieve the competitive stress among the remaining trees, improve their vigor, and make them less prone to successful bark beetle attack."

Variable Density Thinning in the Proposed Action involves management intervention that utilizes the principles of ecological forestry with untreated areas (skips) and openings with limited structure (gaps). Between skips and gaps, a variable basal area thinning, with occasional tree clustering, would reduce stand densities and stocking levels to basal areas suited to the site conditions of that particular stand. Crown closure retention for spotted owl habitat would be maintained. Harrington et al., (2005) found that variable density thinning is operationally feasible and increases spatial heterogeneity within the stands. Roberts and others (2007) found evidence that suggested that variable density thinning with small gaps does not necessarily predispose stands to greater risk of wind damage than uniform thinning when care is taken in locating gaps and skid trails away from topographically vulnerable positions. Gaps in the Activity Area would be located away from high profile ridgelines and away from areas that have exhibited significant past windthrow events. Density Management prescriptions would follow the same variable density design while generally including understory treatments to reduce the hazardous fuels component found therein.

Hazardous Fuels Reduction would reduce risk of catastrophic fire and the subsequent loss of habitat for old-growth associated species by reducing understory densities to a more fire resilient and acceptable stocking level.

Summary

Improvements to stand condition would likely begin to occur within the first 10 years as trees respond to newly available growing space following harvest. Increased growing space would result in lateral and terminal branch growth and root extension, foliage and fine root production, stem elongation, increased height growth and diameter growth. Flower and seed production are also stimulated by release. Resistance mechanisms (to insects and diseases) are expected to improve as trees respond to release with greater

oleoresin (oil and resin) production and added respiration. Tree vigor would improve with additional growing space (Shaw et al., 2009; O'Hara 2004). Trees at wider spacing with larger crowns are capable of producing enough photosynthate to resist insect attacks (Oliver and Larson, 1996, p. 215-216, 126). On the drier sites, allocation of photosynthate would occur first to fine root production; diameter growth would likely not be substantial until later. Vigorous dominant leave trees would be the most productive.

The long term effects (11+ years post-harvest) would see greater increases in tree growth. A notable increase in stem (diameter) growth is expected in treated areas. Over time however, as the undisturbed stand sees densities begin to rise by natural ingrowth and crowns begin to close, individual trees would reallocate their resources to other growth priorities and stem growth would slow. With additional time for individual trees to respond to treatment, more substantial growth is expected in roots, foliar production, and improved live crown ratio. Live crown ratio or the ratio of crown length to tree height is a reliable indicator of tree vigor. Long term effects of vegetation would therefore likely see an increase in the vigor of residual trees.

Table 10: Short Term Vegetatin Effects (0-10 years) of the Proposed Action

Stand Condition	No Treatment	Alternative 2		
		Variable Density Thinning	Density Management/Hazardous Fuels Reduction	Hazardous Fuels Reduction
Vigor of Residual Trees	Continued decline	No change/decrease (in skips) to slight increase	No change to slight increase	Slight increase
Growth Rate	Remain below 1.5"/decade	No change/decrease (in skips) to slight increase	No change to increase	Slight increase
Live Crown Ratio	Decrease	Decrease (in skips) to no change/slight increase	No change to slight increase	Slight increase
Conifer species	No change current sp. to decrease	No change/slight decrease (in skips) to no change/increase species present	No change in current species to increased species present	No change in current species to increased species present
Hardwood Species	No change to decrease	No change/decrease (in skips) to no change/increase	No change to increase	No change to increase
Shrubs/Brush/ Forbs	Decrease	Decrease (in skips) to increase as more light gets to the understory	No change current spp. to increase	No change current spp. to increase
Snags	No change to increase due to mortality	No change/increase (in skips) to no change	No change	No change
Coarse Woody Debris	No change to increase	No change/increase (in skips) to no change/slight increase	Remain the same to slight increase	No change
Branching	Continued loss of lower limbs	Continued loss of lower limbs (in skips) to no change/increase	No change	Retention of lower limbs
Windthrow	No change	No change/slight	No change to slight	No change to slight

Stand Condition	No Treatment	Alternative 2		
		Variable Density Thinning	Density Management/Hazardous Fuels Reduction	Hazardous Fuels Reduction
Hazard	to slight increase as H/D ratios heighten	increase (in skips) to slight increase	decrease	decrease
Ability to Respond to Future Treatments	No change to decrease	No change/decrease (in skips) to no change/slight increase	Slight increase	Increase
Rate of Development of Older Forest Characteristics	No change	No change (in skips) to slight increase	Increase	Increase

Table 11: Long Term Vegetation Effects (11+ years) of Proposed Action

Stand Condition	No Treatment	Alternative 2		
		Variable Density Thinning	Density Management/Hazardous Fuels Reduction	Hazardous Fuels Reduction
Vigor of Residual Trees	Decrease	Decrease (in skips) to increase	Increase	Increase
Growth Rate	Decrease	Decrease (in skips) to increase	Increase	Increase
Live Crown Ratio	Decrease	Decrease (in skips) to slight increase	No change to increase	Increase
Conifer Species	Decrease pine	Decrease pine (in skips) to increase	No change to slight increase	No change to slight increase
Hardwood Species	Decrease black oak/increase tanoak	Decrease black oak/increase tanoak (in skips) to no change/increase	No change to increase	No change to increase then decrease as canopy closes
Shrubs/Brush/ Forbs	Decrease	Decrease (in skips) to increase	No change to increase	Increase then decrease as canopy closes
Snags	Increase due to mortality, smaller diameters	Increase (in skips-sm dia.) to decrease in numbers, increase in size	Decrease in numbers, increase in size	Decrease in numbers, increase in size
Coarse Woody Debris	Increase, but small diameter	Increase (in skips-sm dia.) to no change/slight increase	No change to slight increase	No change to slight increase
Branching	Decrease of lower limbs	Decrease of lower limbs (in skips) to retention of lower limbs until canopy closes, some development /retention of large branches	Retention of limbs present, possible development of large branches currently present	Retention of lower limbs until canopy closes, some development /retention of large branches
Windthrow Hazard	Increase (as H/D ratios rise)	Increase (in skips) to decrease (after potential short-term slight increases)	Decrease	Decrease

Stand Condition	No Treatment	Alternative 2		
		Variable Density Thinning	Density Management/Hazardous Fuels Reduction	Hazardous Fuels Reduction
Ability to Respond to Future Treatments	Decrease	Decrease (in skips) to increase	Increase	Increase
Rate of Development of Older Forest Characteristics	No change to decrease	Increase	Increase	Increase

3.3.2.3 Alternative 2 (Proposed Action) – Cumulative Effects on Vegetation Resources

Foreseeable Projects in the Jumping Bean Ecological Forestry Project Cumulative Effects Analysis Area

There are two foreseeable federal projects in the Jumping Bean Ecological Forestry Project Planning cumulative effects analysis area: the Shorthorn Gulch Land Parcel Sale and 308 acres of non-commercial silviculture treatments under the 2012 Silviculture Practices- Reforestation, Young Stand Management, and Forest Condition Restoration Treatments (FY12-FY17).

The Shorthorn Gulch Land Parcel Sale is proposed within the Jumping Bean Ecological Forestry Project in T34S-R5W-Section 30. This potential land sale of 0.66 acres to resolve an inadvertent trespass is adjacent to Jumping Bean's Unit 30-4. If this land is sold, it would no longer be within the jurisdiction of BLM's management, including vegetation management. The 0.66 acres is not forested land; therefore, the potential sale would not contribute to further harvest activities.

The potential 308 acres of non-commercial silvicultural treatments include 213 acres of Pre-commercial Thinning and 95 acres of pruning would be outside of the Jumping Bean Ecological Forestry Project Activity Area, but within the project's Planning Area. Of these, 25 acres of precommercial thinning with brushing treatments are scheduled to occur between January and December 2013

A reduction in either overstory and/or understory stand density would show improved growth and vigor of residual vegetation. Residual vegetation is expected to respond to the stimulus of increased growing space and to the newly available growth factors necessary for survival (increased availability of water, nutrients, and sunlight). Decreased stand densities would improve short term (0-10 years) and long term (> 11 years) resiliency at multiple scales of analysis. Improvements in stand and landscape scale resiliency to fire, climate change, and disturbance processes would likely occur with density reduction. Tables 10 and 11 describe both treatment and no-treatment responses in greater detail.

There are no other current or future federal timber sale projects planned at this time within the Planning Area. However, this does not imply that future projects would not be considered at a later date if stand conditions warrant treatment.

Long term beneficial effects to vegetation from the two projects, the 308 acres of PCT treatments under the Programmatic Silviculture Categorical Exclusion (FY12-17) and the Jumping Bean Ecological Forestry Project, are reduced understories subsequently improving stand density, vigor, and resource utilization.

Ongoing logging projects are also being implemented on private forest industrial land within the Jumping Bean Ecological Forestry Project Planning Area. On these lands, harvest activities have ranged from partial harvests to clearcuts. Most have been logged over the past 60 years. Within these stands, management objectives are designed to maximize volume growth per acre. Generally, industrial lands are managed using even-aged silviculture systems that remove the majority of the trees on short rotations. These commercially managed stands typically lack very large diameter trees, a substantial number of large snags, large hardwoods, substantial amounts of large coarse woody debris, and unique features. Reduced biological and structural diversity is expected in private industrial forestland which can continue long term if planted with one species and no legacy structure is left after harvest.

3.4 Soil Productivity and Compaction

3.4.1 Affected Environment for Soil Productivity and Compaction

3.4.1.1 Soil Productivity

Soil quality is central to sustainable forest management because it defines the current and future productivity of the land and promotes the health of its plant and animal communities (Doran and Parkin, 1994). Forest soil maintenance is a key factor for sustaining productive forests. Timber harvest activities cause forest soil disturbance that have implications for site productivity (Bockheim et al., 1975). Physical, chemical, and biological soil properties are affected by these types of disturbances (Binkley 1991).

Soil productivity in the Activity Area ranges from low to very high based on Douglas-fir and ponderosa pine site indices. Some soils have high erosion hazard under bare mineral soil conditions where slopes are steep and very steep (greater than 35% slope).

The major management limitations and soil characteristics identified by Natural Resources Conservation Service for the soils and soil complexes found within the Activity Area were used in the selection of proper Best Management Practices (BMPs) and Project Design Features (PDFs) that have been incorporated into the Jumping Bean Ecological Forestry Project (see Section 2.3.3).

3.4.1.2 Soil Compaction

Soil compaction is defined as the packing together of soil particles by physical pressure at the soil surface that results in an increase in soil density and a decrease in pore space. A

decrease in soil pore space results in restricted movement of water, nutrients, air, and plant roots, and generally decreases site productivity in most soil types. Tractor and cable yarding are two harvest methods proposed for use in this project. Of the two, generally, tractor yarding causes the most compaction. Tractor yarding would cause no more than 12% compaction of logged areas, while cable yarding would cause no more than 7% compaction of logged areas under the Northwest Forest Plan and Medford District RMP. These percentages are based on research by Adams and Froehlich, 1981, Dryness, 1967, and Clayton, 1981. Sections 2.3.2.3 describe PDFs to limit soil compaction and effects to soil productivity.

Timber Production Capacity Classification (TPCC)

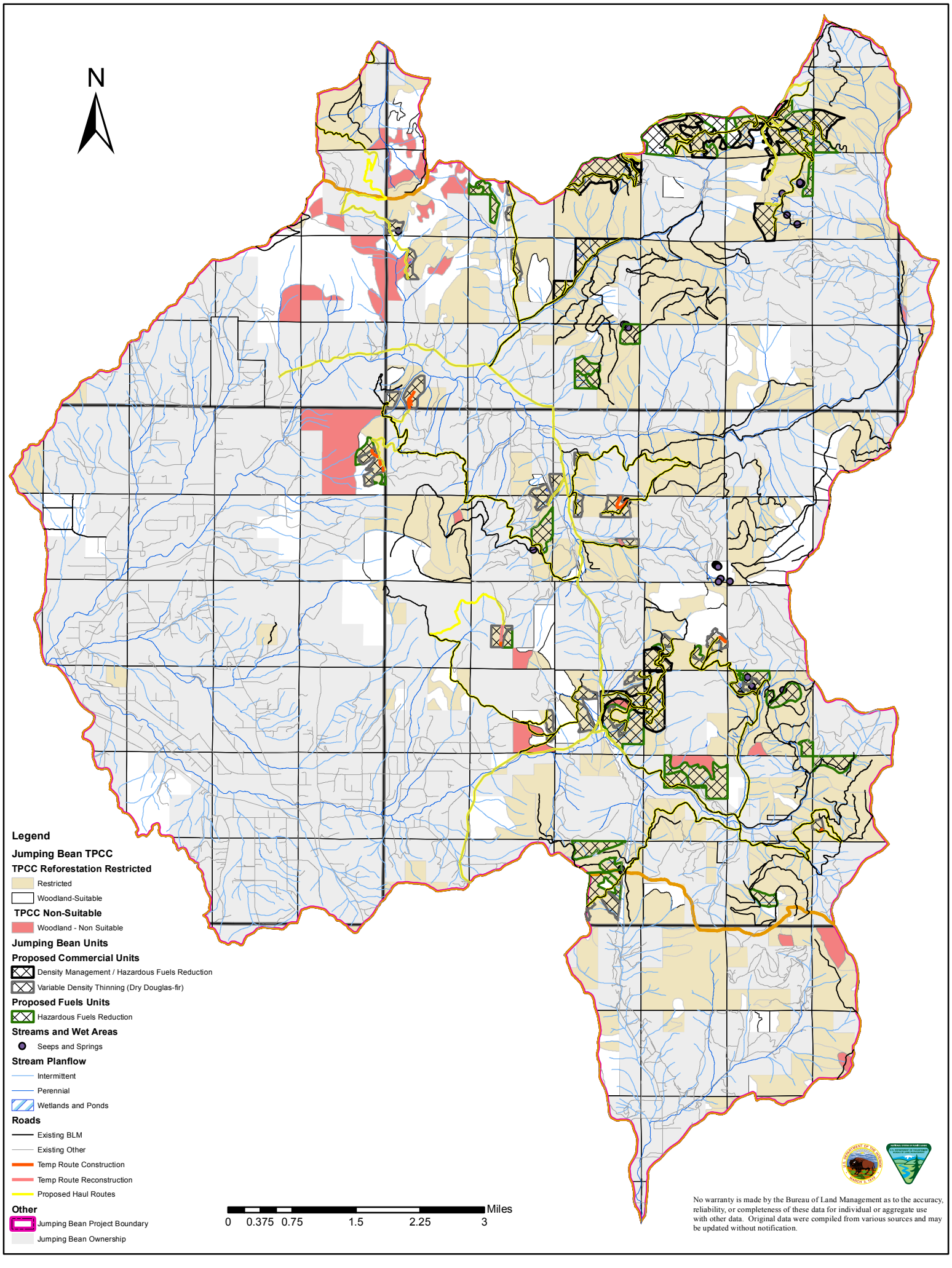
Portions of the Jumping Bean Ecological Forestry Project Activity Area are classified as having TPCC fragile soils or reforestation limited soils under the TPCC Handbook (BLM 1986a). Information is compiled broadly and is not based on site specific field review. As such, these areas are cautiously assessed during site specific field review. The field data collected ultimately determines the specific areas where timber management is suitable.

The reforestation TPCC classifications in the Activity Area are: Reforestation Temperature-Restricted (RTR), (Table 12). Reforestation Temperature-Withdrawn (RTW), Reforestation Moisture-Restricted (RMR), Low-Site Productivity Withdrawn (LSW), and Reforestation Surface Rock Withdrawn (RSW). These TPCC reforestation classifications could have limitations for establishing new trees within 5 years due to temperature, moisture, and surface conditions (i.e., rocky) without further management, rather than have impacts to the physical structure and stability of the soils. TPCC Reforestation Soils are displayed in Figure 7 below.

Though TPCC withdrawn lands are not included as part of the Annual Sale Quantity (ASQ), timber harvest could occur as part of strategies to enhance other resources. The dry forest restoration strategy applied to the Jumping Bean Ecological Forestry Project aims to enhance and protect key features of dry forests, restore ecological processes by improving forest health and to modify high fuel hazard areas to provide protection for timber production areas outside of TPCC withdrawn areas (RMP, p. 72).

There are five units currently classified with portions of TPCC withdrawn classifications; however, field reviews did not find the site conditions reflective of withdrawn classifications. The five units for this project are: 14-4 (9 acres LSW), 15-15 (4 acres RTW), 21-13 (0.4 acres RTW), 31-1A (0.9 acres RTW), and 30-4 (6 acres FNNW).

Low Site (LSW) classifies areas that produce less than 20 ft^3/ac/yr of commercial species. Reforestation Temperature Withdrawn (RTW) classifies areas that would not meet the minimum stocking levels of commercial species within 5 or 6-15 years of harvest depending on land Category. Fragile Nutrient Nonsuitable Withdrawn (FNNW) category describe sites with soils that are inherently low in nutrients or have a nutrient imbalance that inhibits tree growth where forest management activities could reduce site productivity below the threshold of commercial forestland (20 ft^3/ac/yr).


N
Legend
Jumping Bean TPCC
TPCC Reforestation Restricted
Restricted
Woodland-Suitable
TPCC Non-Suitable
Woodland - Non Suitable
Jumping Bean Units
Proposed Commercial Units
Density Management / Hazardous Fuels Reduction
Variable Density Thinning (Dry Douglas-fir)
Proposed Fuels Units
Hazardous Fuels Reduction
Streams and Wet Areas
Seeps and Springs
Stream Planflow
Intermittent
Perennial
Wetlands and Ponds
Roads
Existing BLM
Existing Other
Temp Route Construction
Temp Route Reconstruction
Proposed Haul Routes
Other
Jumping Bean Project Boundary
Jumping Bean Ownership
Miles
0 0.375 0.75 1.5 2.25 3
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources and may be updated without notification.

Field review found these units to have timber productive site conditions capable of producing and maintaining a substantial conifer component likely to meet the minimum thresholds of 20 ft^3/ac/yr and/or can meet minimum stocking levels of commercial species. Unit 14-4 is a timber productive piece along the eastern boundary of a 35 acre LSW land classification from 1985. The 4 acre RTW portion of 15-15 is the southeast corner of a 121 acre RTW land classification from 1983 that is uncharacteristic of adjoining RTW land. The 0.4 acre RTW portion of 21-13 is the southeast sliver of a 122 acre land classification from 1985 and uncharacteristic of adjoining RTW land. The 0.9 acre RTW portion of 31-1A is a 3 acre southern finger of a 27 acre RTW land classification from 1986 that is not characteristic of adjoining RTW land. The FNNW piece in 30-4 is the eastern tip of a 69 acre classification area designated in 1987 that is uncharacteristic of adjoining FNNW land.

The Medford District RMP (p. 72) provides the guideline that limited timber harvest could occur on TPCC withdrawn lands to provide more logical logging units or for reasons of forest health. No harvesting would occur on areas 5 acres or greater until reclassifications have been approved by an interdisciplinary review process on the Medford District. These include units 14-4 (9 acres LSW) and 30-4 (6 acres FNNW).

The PDFs in Section 2.3.3.3 would protect these stands reforestation capability.

3.4.2 Environmental Effects on Soil Productivity and Compaction

3.4.2.1 Alternative 1 (No Action) - Effects on Soil Productivity and Compaction

Alternative 1 would result in a negligible increased productivity of the soil. Existing compaction/displacement within the harvest units proposed for the Jumping Bean Project would continue passive amelioration of prior compaction.

In the Planning Area on non-federal lands, compaction may increase if the rate of logging and development on private lands increases. In the next 20 years, compaction levels should remain moderate on BLM lands (<12% of compacted area). Fine roots of current vegetation would continue to loosen compacted soil. Leaf fall and other litter from the vegetation would continue to add organic material to the soil. The effects of freeze and thaw and plant growth would continue to reduce compaction in undisturbed areas. Depending on site conditions, this may take decades instead of years. There would be no increase of compaction in undisturbed areas. However, in areas that would remain roaded and would have regular harvest activity, compaction would not be reduced. Soil productivity in areas not affected by past disturbance would continue along existing productivity patterns.

3.4.2.2 Alternative 2 (Proposed Action) - Direct and Indirect Effects on Soil Productivity and Compaction

Alternative 2 proposes 1,125 acres of commercial extraction activities, 1.2 miles of temporary route construction, 0.27 miles of temporary route re-construction, and 79 miles of existing road maintenance. Best Management Practices (BMPs) in the Medford District Resource Management Plan (BLM 1995 p.166) describe the use of designated

skid roads within stands to limit horizontal soil compaction to less than 12% of the harvest area. These activities would result in an estimated 102.6 acres of soil compaction and displacement over new and existing footprints and would reduce soil productivity by an estimated 3.22% in the Activity Area. Total compaction/displacement associated with temporary routes, tractor skid trails, landings and cable yarding corridors would account for approximately 9.13% of the project Activity Area[8]. Each proposed Jumping Bean Ecological Forestry Project harvest unit would be below 12% compaction and 5% productivity loss as analyzed in the 1994 Medford District FEIS RMP. Units proposed for Hazardous Fuel Reduction would not contribute to soil compaction or productivity loss, since no commercial extraction is proposed for these units.

With the implementation of Alternative 2, soils would return to the same productivity range within 3-5 years following BMP guidelines. Rehabilitation of skid trails would improve productivity. The specific elements of the Proposed Action that would affect the physical, chemical, or biological properties of soils in proposed harvest units are described below.

Soil Compaction/Displacement

Roads

Temporary routes are not intended to be part of the permanent or designated transportation network system. Temporary route re-construction would occur on 0.27miles. These roads utilize existing road footprints that are currently compacted as a result of past harvest activities and amount to approximately 0.46 acres. Temporary route re-construction on federal land would be decommissioned after harvesting and fuels treatments are completed. Road decommissioning for this project would involve blocking roads, sub-soiling the road surface to allow for water filtration, installing waterbars, and applying seed and mulch. Waterbars would filter water runoff and direct drainage off the road surface and away from streams and into vegetation that is adequate to slow surface water, and allow for deposition of detached soil particles. Mulching helps minimize surface erosion and seeding helps to establish vegetation re-growth. Sub-soiling road surfaces would reduce soil compaction to improve soil productivity on these 0.46 acres.

A total of 1.19 miles of temporary route construction is anticipated to occur during implementation of the Jumping Bean Ecological Forestry Project, resulting in 0.14 acres of soil compaction. These routes would allow harvest operations to occur within Units 1-2, 15-5A, 17-4, 25-17, 31-1B, and 9-16. Temporary route construction on federal land would be decommissioned after harvesting and fuels treatments are completed. This road decommissioning would be done in the same manner as described above for re-constructed routes. There would be some short-term loss of soil productivity where the temporary route was constructed due to displacement of soil organics. Soil productivity would recover within 1-3 years as disturbed sites become revegetated. Sub-soiling road surfaces would occur to aid in site recovery. Manual revegetation with native species would occur to further accelerate rehabilitation. There would be an increase in soil

[8] Units identified for tractor yarding are calculated at 12% compaction and cable yarded units are calculated at 7% compaction. These compaction percentages are based on research by Adams and Froehlich, 1981, and Clayton, 1981.

productivity within the unit along these temporary routes in areas where the organics were deposited (e.g., fill-slopes). Sub-soiling road surfaces of temporary routes would ameliorate compaction.

Landings, Skid trails, and Cable Yarding Corridors
Soil compaction from landings, skid trails, and cable yarding corridors would be utilized during the extraction of commercial size timber.

Landings, skid trails, and cable yarding corridors would be winterized and rehabilitated by properly installing and/or using water bars, berms, sediment basins, gravel pads, hay bales, small dense woody debris, seeding and/or mulching, to reduce sediment runoff as described in Chapter 2 (Section 2.3.2 Project Design Features). Tractor landings in Riparian Reserves and all natural surface landings would be subsoiled after use to mitigate compaction.

Operators working within previously harvested units would be required to utilize existing skid trails and cable yarding corridors to the greatest extent possible before consideration of new trails and corridors. New skid trails, would be pre-designated and approved by the BLM Authorized Officer.

Off Designated Skid Trails, Use of Mechanized Harvest Equipment
Mechanized harvest equipment (if used) would operate from slash mats that would be a minimum 8 inches in depth. Slash mats would disperse downward pressure across the soil surface.

Soil Productivity

The proposed silvicultural treatments would increase productivity of residual trees after 3-5 years by effectively increasing their access to additional water and nutrients. Thinning would improve or maintain stand vigor and growth rates. Many of these stands are currently showing reduced growth rates as a result of overstocked conditions that are causing competition for soil nutrients and water. The Proposed Action would reduce competition among the retained trees for light, nutrients, water and growing space.

Units with a Reforestation Suitable Restricted classification that are proposed for timber extraction are under the Density Management/Hazardous Fuels Reduction and Variable Density Thinning prescriptions in the Jumping Bean Ecological Forestry Project. These treatments are thinning actions where leave trees and natural reforestation would meet the minimum restocking guidelines under the NWFP. Aggressive tree planting on these sites would not be needed, although inter-planting may occur to supplement stocking criteria and enhance species diversity.

“These sites will meet or exceed minimum stocking levels of commercial species within 5 years of harvest using operational practices,” (BLM 1986a). The proposed treatments on the reforestation suitable restricted classification would not have effects to productivity beyond those as described in Section 3.4.2.3. Lands classified as RTW or RSW are not prescribed for treatment to develop stands for rotation timber harvest

production and are not expected to provide a long term sustainable flow of timber goods, but rather to improve their stand condition, vigor, and health.

3.4.2.3 Alternative 2 (Proposed Action) - Cumulative Effects on Soil Productivity and Compaction

Since there are no foreseeable projects that overlap proposed units for the Jumping Bean Ecological Forestry Project, there would be no additional cumulative effects predicted beyond those anticipated to soil productivity and compaction for this project.

As such, productivity loss resulting from topsoil disturbance and soil compaction associated with timber harvesting for this project would not exceed a combined calculated total of 5% as described within the Medford RMP (USDI 1995). Standard operating procedures would keep compaction/disturbance values for this project below the 5% productivity loss per unit and less than 12% compaction/disturbance associated with ground based harvest systems (BLM 1995, p. 166).

3.5 Soil Erosion and Sensitive Soils

3.5.1 Affected Environment Soil Erosion and Sensitive Soils

3.5.1.1 Methodology

The affected environment for soil erosion and sensitive soils includes proposed project units and areas 50 ft to either side of temporary routes and haul roads. These potentially impacted areas are referred to as the "Activity Area." Where this analysis identifies that soil erosion would be transported offsite into streams or other hydrologically connected conduits, impacts are analyzed within Section 3.6, Water Quality: Stream Sedimentation. Providing an analysis for this element at a larger scale, without further cause, would remove all measurable impacts, and eliminate any meaningful discussion of the effects.

3.5.1.2 Assumptions

For this analysis it is assumed that non-federal actions would continue to follow current trends, and that those actions would be consistent with the Oregon Forest Practices Act, and all state, federal, and local laws. It is also assumed that most non-federal harvest operations would have little rehabilitation in terms of sub-soiling and erosion control, and that harvesting would continue to occur on a 40-80 year rotation in the foreseeable future.

3.5.1.3 Geology, Soils, and Soil Complexes

The Planning Area lies within the Klamath Mountains Geologic Province. This is an area that began uplifting around 14 million years ago, and has been shaped, primarily by water, into a mountainous bowl with a large valley floor. Typical soils and soil complexes in this Planning Area formed in residuum (i.e., weathered in place) and colluvium (i.e., material rolling downhill), alluvium (water transported) from meta-volcanic, meta-sedimentary, granitic, and serpentine rock.

Soils in this Planning Area range from a silt loam to cobbly clay loam in the surface horizon. These soils generally have a moderate erosion hazard on slopes less than 30%, and a moderate to high hazard of erosion on steeper slopes. Soils are generally well-drained and moderately deep (20-60^{+} inches to bedrock), with some localized areas of shallow soils and rock outcrops. These soils are largely suited for growing Douglas-fir, ponderosa pine, and Pacific madrone. Other tree species are present in certain areas, in varying quantities. Soil maps and descriptions of project soil characteristics are available at the USDA Natural Resource Conservation Service (NRCS) web site: http://www.or.nrcs.usda.gov/pnw_soil/or_data.html. The major management limitations and soil characteristics identified by NRCS for the soils and soil complexes found within the Planning Area were used in the selection of proper Best Management Practices (BMPs) and Project Design Features (PDFs) that have been incorporated into the Jumping Bean Ecological Forestry Project.

3.5.1.4 Sensitive and Fragile Soils

Portions of this Planning Area are classified as having category 1 and 2 sensitive soils as described in the Medford RMP, which are soils with moderate burn damage potential as classified by NRCS. There are also areas of fragile and reforestation limited soils under the Timber Production Capability Classification (TPCC) Handbook (BLM 1986a).

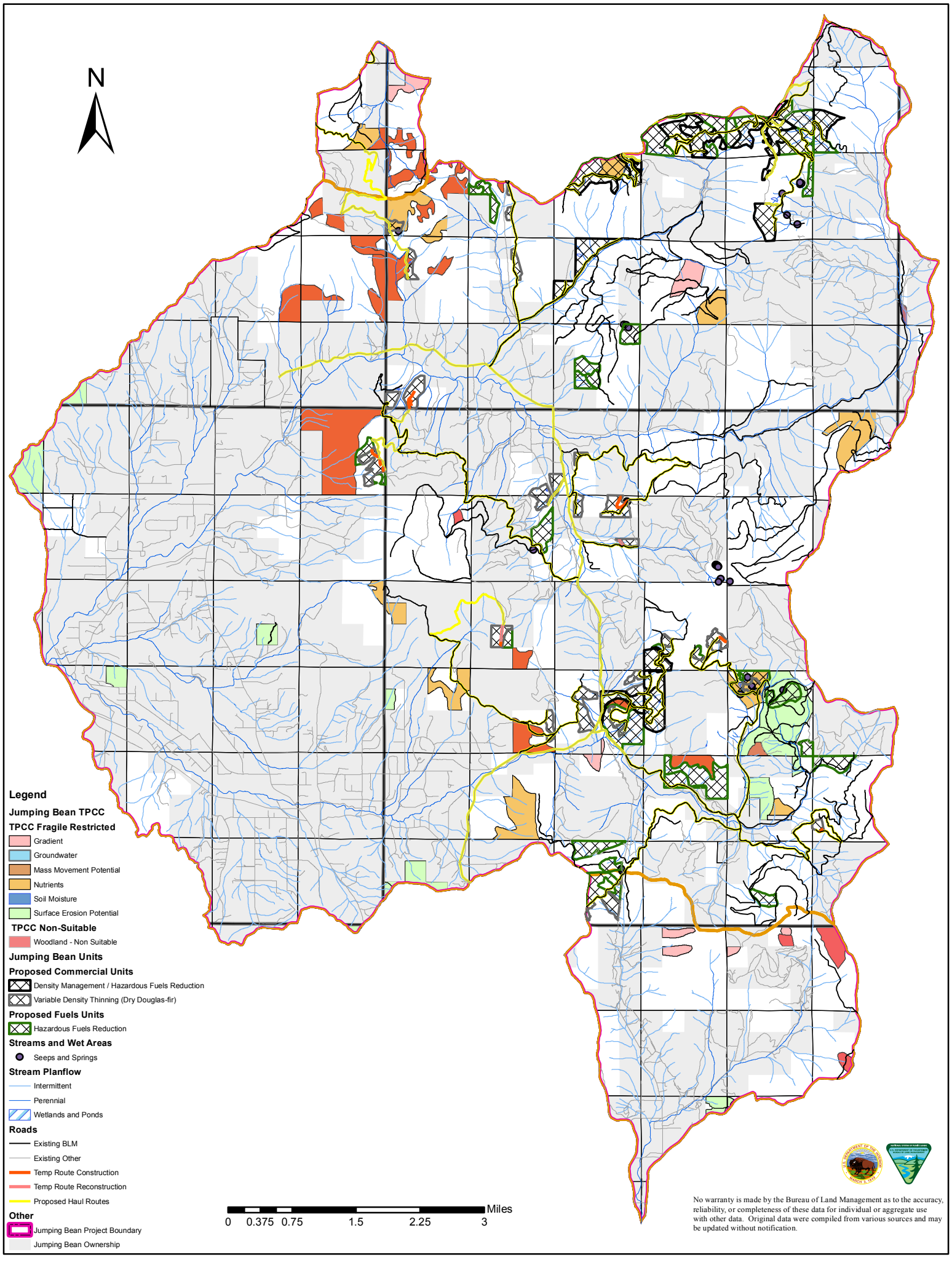
Category 1 and 2 soils are described within the Medford RMP in respect to silviculture site preparation and prescribed burning. These classes of soils need to be burned during spring-like conditions when maximum duff layer retention can be attained and minimum coarse woody debris and snag retention requirements (USDA/USDI 1994b, p. C-40) can be achieved. These soils will only be discussed in the alternatives for actions that involve prescribed burning.

Where NRCS classification of moderate potential for burn damage occurs there could be negative impacts to soil characteristics, but "fair performance of future growth and establishment can be expected" (http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx). These soils will only be discussed in the alternatives for actions that involve prescribed burning.

TPCC fragile and reforestation classifications within the Planning Area include Fragile-Surface Erosion Potential- Suitable (FMR), Fragile-Nutrient-Suitable (FNR), Fragile-Nutrient-Non-Suitable (FNNW) Reforestation-Temperature-Suitable (RTR), Reforestation-Temperature-Non-Suitable (RTW) Reforestation-Moisture-Suitable (RMR), Reforestation-Surface Rock-Non-Suitable (RSW), and Low Site Non-Commercial Forest Land (LSW). Units with TPCC fragile or non-suitable classifications are shown in Table 12. Units not shown in Table 12 have RTR and/or RMR TPCC classifications.

Fragile-Surface Erosion Potential-Suitable (FMR) sites are considered suitable for commercial harvest actions, but have surface horizons that are highly erodible. Forest management on FMR soils would not result in increased surface erosion (TPCC Manual pg13). Fragile-Nutrient- Suitable (FNR) sites are inherently low in nutrients or have a nutrient imbalance that inhibits tree growth. Since forest management on FNR sites

would not reduce site productivity below the threshold of commercial land, these sites are also considered suitable for commercial harvest. All TPCC fragile classified sites in this project would be implemented using site specific PDFs or BMPs to minimize impacts to soils. Further information on these classifications can be found in the BLM Handbook 5251-1 (BLM 1986a). Figure 8 illustrates TPCC Fragile soil types within the Planning Area.


N
Legend
Jumping Bean TPCC
TPCC Fragile Restricted
Gradient
Groundwater
Mass Movement Potential
Nutrients
Soil Moisture
Surface Erosion Potential
TPCC Non-Suitable
Woodland - Non Suitable
Jumping Bean Units
Proposed Commercial Units
Density Management / Hazardous Fuels Reduction
Variable Density Thinning (Dry Douglas-fir)
Proposed Fuels Units
Hazardous Fuels Reduction
Streams and Wet Areas
Seeps and Springs
Stream Planflow
Intermittent
Perennial
Wetlands and Ponds
Roads
Existing BLM
Existing Other
Temp Route Construction
Temp Route Reconstruction
Proposed Haul Routes
Other
Jumping Bean Project Boundary
Jumping Bean Ownership
0 0.375 0.75 1.5 2.25 3
Miles
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources and may be updated without notification.

Reforestation-Temperature-Suitable (RTR) and Reforestation-Moisture-Suitable (RMR) sites have reforestation difficulties rather than impacts to the physical properties and structure of the soils. All unit treatments under the Jumping Bean Ecological Forestry Project would be thinning, underburning, handpile burning, or lop-and-scatter treatments. As such, leave trees and natural reforestation within units would meet the minimum restocking guidelines under the NWFP, and tree planting on these sites would not be needed. "These sites will meet or exceed minimum stocking levels of commercial species within 5 years of harvest using operational practices," (BLM, 1986). Burning is not restricted on these sites unless they overlap category 1 or 2 soils. RTR and RMR soils will only be discussed for road construction, road reconstruction, and landing construction actions, where vegetation removal could impact restocking. See Section 3.5; Soil Compaction and Productivity for additional information on actions located on TPCC reforestation classifications.

Fragile-Nutrient-Non-Suitable (FNNW), Reforestation-Temperature-Non-Suitable (RTW), Reforestation- Surface Rock-Non-Suitable (RSW), and Low Site Non-Commercial Forest Land (LSW) non-suitable classifications sites have been determined through the TPCC classification process to be unsuitable for commercial harvest operations. However, these sites are to be considered for restorative treatments and some non-commercial actions. For reforestation non-suitable classifications, any harvest action that would reduce the number of trees below minimum stocking levels would not be appropriate. Further information on all TPCC classifications can be found in the BLM Handbook 5251-1 (BLM 1986a).

Table 12: TPCC Fragile and Non-suitable classifications within Proposed Units

Unit #	Treatment Proposed	TPCC Classification	Unit #	Treatment Proposed	TPCC Classification
14-3	HFR	LSW	21N-2	HFR	FNR/RMR/RTR
14-4	DM/HFR	LSW	21S-1	HFR	FNNW
15-15	VDT	RTW	23-1A	HFR	FMR/RTR
15-22	HFR	RTW	23-4	VDT	FNR/RTR
15N-15	HFR	LSW	23-4A	HFR	FNR/FMR/RTR
20-10	HFR	LSW	31-1A	VDT	RTW
21-13	VDT	RSW	35-23	HFR	RTW

*Treatments on FNR and FMR units would be implemented using protection measures for TPCC fragile soils. Treatments on units classified as TPCC restricted or withdrawn would be implemented using standard protection measures for this project.

The Jumpoff Joe Creek Watershed Analysis (WA) and Grave Creek WA identify broad areas that may be prone to soil instability, mass failure, or sedimentation within the Jumpoff Joe Creek Watershed. As stated on the Jumpoff Joe Creek map, the information displayed assumes bare soil conditions with no vegetative protection. Both of these maps are also based on broad compilation that is not founded from site specific field review. As such, these identified areas are cautiously assessed during a site specific field review of all potential units. This field data collected ultimately determines the specific areas where timber management is suitable.

All but three units proposed for this project have category 1 or 2 soils. Units 15-15 and 23-1 have areas where moderate burn damage could occur under the NRCS classification. Implementation of the PDFs (Section 2.3.2.3) requiring burning to occur during spring like conditions would reduce the risk of this occurring.

3.5.1.5 Erosion

Primary sources of accelerated erosion (above natural levels) in these sub-watersheds are forest management activities, mining, and roads. Forest management activities including road, skid trail, and landing construction, yarding, and broadcast burning have augmented natural erosion events within these sub-watersheds.

Timber Harvest

Soil displacement refers to the moving of the surface soils as a result of some applied force. When soil displacement occurs, soil horizons may become mixed, essential soil nutrients, water, and soil organisms may be rearranged or removed, and topsoil may become rutted. These alterations to the soil profile or soil characteristics may result in accelerated erosion. As defined in Section 3.4.1.2, soil compaction is the packing together of soil particles by physical pressure at the soil surface that results in an increase in soil density and a decrease in pore space. A decrease in soil pore space results in restricted movement of water, nutrients, air, and plant roots, and as such generally decreases site productivity in most soil types. Reduced pore space also reduces infiltration, causing an increase in surface runoff that can result in accelerated erosion rates.

Soil displacement and compaction occur during forest management operations when mechanized harvesting or yarding equipment is driven over or yards timber across poorly vegetated, weak, or wet soils. Vegetative cover reduces the particle detachment rate, and through the binding capacity of root masses, the sediment transport rate (NOAA Fisheries, 2004, (Larson and Sidle, 1981; Harvey et al., 1994). Therefore surface erosion, from disturbed soils that are not compacted, is normally greatly diminished within 1-3 years, following the regrowth of vegetation. Soils protected by litter are also less prone to erosion (SOLO, 2006; Rothacher and Lopushinsky 1974). Decommissioning that includes sub-soiling can greatly reduce the recovery period for compacted soils. Erosion from decompacted sites would be similar to those discussed for soil displacement. In cases where compacted soils have not been rehabilitated, erosion and other soil impacts can persist for 40- 80 years, or more (Wert and Thomas, 1981).

Within the Planning Area, approximately 3,445 acres (6.1% of the Planning Area) were harvested across all ownerships between 1972 and 2009. Information on harvested acres since that time is not readily available, however, based on past trends it would be expected that approximately 350 additional acres were harvested within this Planning Area between 2009 and January 2013.

Of the harvested acres, approximately 1,320 acres (35%) were harvested on federally managed lands. The majority of harvest on federal lands occurred between the late

1970s and the early 1990s, prior to the implementation of the Northwest Forest Plan. Within previously harvested units in the Planning Area, evidence of past compaction is still present along tractor skid trails and landing areas. In areas where new vegetation has not established, due to detrimentally compacted or disturbed soils, instances of accelerated erosion were also visible during field surveys.

Roads

Within the Planning Area, there are approximately 443 miles of permanent existing system roads that are currently used and maintained as funding allows. Most of these roads are open to the public and are periodically used and maintained as haul routes for forest management operations. Due to limited funding for maintenance, and multiple ownerships, some roads in this Planning Area show evidence of surface erosion, inadequate drainage, inadequate stream crossings or unstable cut-banks and fill slopes. All roads can contribute to accelerated erosion at different levels depending on the surface type, type of use, location, maintenance frequency, and moisture levels of the road surface during use.

Existing roads proposed for haul and maintenance are paved, rocked, or native surface. Paved roads proposed for haul are in good condition would require only rare instances of ditchline maintenance. Rocked roads proposed for haul for this project overall have good surface conditions and adequate drainage. These roads would be expected to have low levels of erosion unless utilized for hauling under wet conditions. Native surface roads that are proposed for haul tend to have weak soil bases that become vulnerable to excessive erosion when wet. All roads proposed for haul are adjacent to TPCC restricted classifications on BLM lands. Road densities within this Planning Area are currently 5.1 mi/mi^2.

Accelerated erosion results from blading of road surfaces, use of inadequately rocked and natural surface roads, wet condition hauling, ditchline maintenance, an insufficient number of cross drain culverts, and undersized or poorly placed cross drain culverts.

In this Planning Area cross drain culverts on road systems are generally spaced further apart than recommended under the Oregon Administrative Rules for forest roads (OAR 629-625-0330). However, upgrading this spacing is only required where it is necessary to prevent the Proposed Action from exceeding water quality standards. For the most part, ditchlines in this Planning Area appear to be functioning properly; showing adequate movement of water, and little scour. In isolated areas where ditchlines are not properly functioning, the pulling of the ditch would be adequate to correct these problems. Downspouts of some cross drains and stream culverts could be upgraded by installing splash pads or downspouts to reduce existing stream draw erosion.

Poorly located roads can cause accelerated erosion as a result of the channelization of flow on hillslopes, and in some cases mass wasting (Wemple and Jones, 2003). Some historical roads on both public and private lands within this Planning Area are poorly

located and have contributed to excessive erosion and instances of mass wasting. On public lands, these roads are managed to reduce erosion and risk of mass wasting.

For the Jumpoff Joe Creek Watershed, transportation management objectives were developed in 2001 for BLM roads. Recommendations for road improvements, closures, and decommissioning were established and are implemented as funding allows and NEPA requirements are met. Within the last 7 years, there have been several restoration projects in this Planning Area that have been implemented to reduce erosion and improve stream function. The 35-5-26.2 and 35-5-21 roads receive 1.76 miles of bituminous chip seal, and had ditch cleaning preformed where needed to improve drainage. Approximately 0.7 miles of the 35-5-26.5 road was reshaped and had armored rolling dips installed.

Approximately 20 miles of skid trail, spur road, and landings were decompacted using a winged ripper. There were approximately 2 miles of non-designated, user created OHV trails that were blocked with earthen berms and covered with woody debris to reduce erosion. At five locations along the 35-5-26.4 road, approximately 1,500 feet of bare, eroded cut banks, in granitic soils and weathered rock, were hydro-mulched and seeded with native species to reduce cut bank erosion entering the ditchline. There were also three logs and five boulders that were placed within Louse Creek to improve stream function and fish habitat.

Wildfire, Prescribed Fire Fuels Reduction, and Silvicultural treatments

There are approximately 225 acres of hazardous fuel reduction treatments that have occurred in the past five years within the Planning Area. These treatments were designed to limit the extent and magnitude of onsite erosion (retained within the vegetation of each unit and would not be transported to streams), and to protect from offsite erosion. These treatments help to reduce the probability of an intense, large scale wildfire occurring by reducing fuel loading and horizontal continuity within the stand. Based on field reconnaissance, there is no evidence within treatment units of any persisting accelerated erosion as a result of these treatments.

Heat resulting from large scale and intense fires can damage soil biology such as mycorrhizae, nitrifying bacteria, and other soil organisms in proportion to burn intensity, adversely affecting soils for up to 10 years (Barnett 1989). GIS data indicates that there have been 90 wildfires in the Planning Area in the last 10 years. Seventy-eight of these were Class A fires, less than 0.25 acres in size. Another 12 were Class B fires that were all less than 3.5 acres in size. The extent of offsite erosion from these fires, though expected to be negligible, has not been measured.

Silvicultural understory thinning and fuels reduction treatments have occurred in this Planning Area under the Young Stand Management Categorical Exclusions. These treatments included pre-commercial thin, brushing, handpile burning, and pruning on approximately 360 acres throughout the Planning Area in the last 5 years. These treatments resulted in low levels of onsite erosion. Based on field review there is no evidence within treatment units of any persisting accelerated erosion as a result of these treatments.

3.5.2 Environmental Consequences Soil Erosion and Sensitive Soils

3.5.2.1 Alternative 1 (No Action) Effects to Soil Erosion and Sensitive Soils

Under the No Action Alternative, erosion from land management actions across all ownerships within this Planning Area would be expected to remain consistent with current levels over the long term, but may vary from year to year. While some new roads on non-BLM managed land would be constructed, erosion from roads is likely to remain at current levels or may even decrease in the future since road design and construction practices have been greatly improved from the practices used when legacy roads were constructed. On BLM lands, older legacy roads that were poorly constructed or constructed in poor locations would likely continue to be decommissioned and re-routed when possible, or upgraded as projects and funding occurs. Non-federal roads would be expected to be managed consistent with the Oregon Forest Practices Act, and the needs of the landowner.

It would be expected that new harvest actions would be implemented across all non-federal ownerships that would result in erosion and compaction. Based on past harvest trends, acres impacted by non-federal harvest would be expected to be between 500 - 600 acres during the next 5 years. Where compacted acres from past road construction and timber extraction are not associated with actively maintained road systems, soils would continue to improve slowly over time as tree roots and other natural processes begin to break apart soil particles, eventually resulting in a reduction in compaction on these acres. During this period, some areas would experience an increase in erosion due to gullies and rills that form on compacted and unmaintained skid trails. These acres would likely reestablish full hydrologic and soil functions within 40-80 years, depending on soil type and condition at the time of harvest (Wert and Thomas, 1981).

Broadcast burning, pile burning, and other activity fuels treatments would be expected to continue on non-federal lands under the No Action Alternative. All actions would be required to be done in accordance with Oregon Forest Practices Act requirements. Treatment of activity fuels and site preparation of units will likely result in accelerated erosion, stream sedimentation, and localized chemical alterations to the soil and water.

The extent of the impact to water quality from non-federal harvest related actions is not known. Urbanization and rural development on private lands is expected to continue, along with road building to support this development. More impervious surfaces would be created that would be unlikely to recover hydrologically due to continuous use. However, due to improved practices the magnitude of these impacts would be expected to be equal to, or less than, those that have occurred during past timber management activities and would be expected to be compliant with the Clean Water Act.

Under Alternative 1, erosion could occur in conjunction with scheduled and emergency road maintenance activities under the Medford Road Maintenance Categorical Exclusion. These actions would be limited to within the road right-of-way and would be done using BMPs to protect from offsite erosion. These road activities are ongoing actions on Medford BLM lands, and have been further refined to reduce the instances and

magnitude of offsite or excessive erosion. These actions would therefore be expected to maintain or reduce current erosion levels from roads in the future.

There are two foreseeable federal projects in the Jumping Bean Ecological Forestry Project Planning cumulative effects analysis area: the Shorthorn Gulch Land Parcel Sale and 308 acres of non-commercial silvicultural treatments under the 2012 Silviculture Practices- Reforestation, Young Stand Management, and Forest Condition Restoration Treatments (FY12-FY17).

The potential 308 acres of non-commercial silvicultural treatments include 213 acres of Pre-commercial Thinning and 95 acres of pruning would be outside of the Jumping Bean Ecological Forestry Project Activity Area, but within the project's Planning Area. Since yarding of material would not occur for these treatments, anticipated erosion would be limited to low levels that would remain onsite, and due to BMPs would not affect water quality.

The Shorthorn Gulch Land Parcel Sale is proposed within the Jumping Bean Ecological Forestry Project in T34S-R5W-Section 30. This potential land sale of 0.66 acres to resolve an inadvertent trespass is adjacent to Jumping Bean's Unit 30-4. If this land is sold, it would no longer be within the jurisdiction of BLM's management, including soil management.

Regular passenger and all-terrain vehicle use of road systems within this Planning Area by the public would be expected to continue. Erosion from roads as a result of this use would be expected to continue to occur at current rates.

Soil impacts resulting in erosion as a result of all federal projects discussed above are consistent with the impact analysis and conclusions provided in the 1994 Medford RMP EIS.

3.5.2.2 Alternative 2 Effects to Soil Erosion and Sensitive Soils

Management actions proposed under Alternative 2 would result in soil displacement and erosion within the activity areas, although would remain within those disclosed in the EIS, 1994 and RMP/ROD, 1995. Field surveys were used to identify and defer all areas that have the potential to result in chronic erosion, excessive soil displacement, or landslides. BMPs and PDFs were then identified and incorporated into the Jumping Bean Ecological Forestry Projects Proposed Action to address the remaining general management concerns identified for each soil type.

Following incorporation of these BMPs and PDFs, actions that would result in offsite erosion would be limited to, hauling and maintenance activities on roads that are hydrologically connected via ditchlines or stream crossings, and the reconstruction and subsequent decommissioning of the temporary route into Unit 9-14. All other road use, temporary route construction and reconstruction (including associated decommissioning), skid trail construction and decommissioning, landing construction and rehabilitation, yarding operations, activity fuels, and understory thinning treatments proposed under Alternative 2, would result in localized increases in accelerated onsite erosion that would

persist for 1-3 years. Below is the description of all activities that would result in accelerated onsite erosion. Offsite erosion and stream sedimentation from hydrologically connected road maintenance and haul is discussed in Section 3.6 Water Quality: Stream Sedimentation. All other critical environmental elements, related to soil erosion and water resources, not affected by Alternative 2 are addressed within Appendix 1 of the EA.

Forest Management Units

Timber Harvest: Yarding Corridors, Skid Trails, and Landing Construction

Under Alternative 2, the construction, use, and rehabilitation of landings, skid trails, and whole tree and cable yarding corridors would result in up to 63 acres of compaction and accelerated on-site erosion within treatment units. There are a total of 1,125 acres in 44 Density Management and Variable Density Thinning units that are proposed for overstory thinning and product extraction under Alternative 2. A total of 36 acres in 1 Density Management unit and 3 Variable Density Thinning units would occur on partially overlap TPCC fragile restricted classifications. The Density Management unit 21N-1 overlaps 2.1 acres of FNR soils. A total of 29 acres within Variable Density Thinning Units 19-11 and 23-4 also overlap FNR soils. There are also 5.6 acres in Unit 30-4 that presently overlaps FNNW soils. This unit would not be treated if the pending reevaluation process to amend this unit classification to FNR is not approved (See silvicultural write-up, Section 3.4.1.2). FNR soil classifications are discussed in the Affected Environment portion of this element (Section 3.5.1). These TPCC restricted areas have been surveyed in the field to ensure site stability, and were found to be suitable for logging and activity fuels reduction with the following conditions. To protect these sites and minimize potential erosion consistent with the Medford RMP and Standard Operating Procedures for soils the following PDF's would be implemented.

- All logging operations would be limited to the dry season on FNR (May 15-Oct 15);
- Whole tree yarding and biomass removal would only occur if necessary to prevent an increase in the fire hazard classification for the unit.
- Mechanically piling of slash would not occur.

Implementation of these Project Design Features, as well as the standard project PDF's would greatly reduce the amount of compaction, surface disturbance, and the amount of exposed soil following treatments that would occur as a result of Alternative 2. This would minimize the impacts of this action on soils. PDFs would also eliminate offsite transport mechanisms and keep erosion from yarding, skid trails, and landings onsite and out of streams.

Activity Fuels, Prescribed Burning, and Understory Silvicultural Treatments

Understory thinning, Hazardous Fuels Reduction, and activity fuels treatments would occur as necessary to maintain or reduce the fire hazard on up to 2,326 acres within 84 units in this Planning Area. Of these, 2,247 acres would occur on Category 1 and 2 soils, and on 89 acres that have a moderate potential for burn damage under the NRCS classification. Hand pile burning and underburning would have a localized impact to

soils that would be reduced through regulation of the burn intensity and moisture conditions outlined in the burn plan. There are additionally 6 acres of TPCC FNR and FNNW soils in units that may be treated. There are no FNR or FNNW soils that would be treated within the Riparian Reserve of Density Management or Variable Density Thinning units.

All understory thinning, Hazardous Fuels Reduction, and activity fuels treatments would include any combination of lop-and-scatter, hand-piling and handpile burning, or underburning. Lop-and-scatter would not adversely impact sensitive or fragile soils, and would provide additional erosion protection. Handpile burning and underburning would have a localized impact to soils that would be reduced through regulation of the burn intensity and moisture conditions outlined in the burn plan.

To ensure that erosion remains onsite during activity and fuels reduction treatments, and soil damage and erosion are minimized and consistent with those impacts analyzed in the 1994 Medford RMP EIS, all burning activities on sensitive and fragile soils would be implemented under a burn plan that is designed to achieve the following;

- Burning would be minimized to maintain vegetative cover, soil organic matter and preserve the duff layer. If burning is required, burns would occur in cool spring like conditions. Slash would not be mechanically piled.
- Large cull logs (greater than 12 inches on the small end) would be left on the site unless quantity is such that an increase in fire hazard classification would result. In this case, cull logs could be removed only as necessary to maintain original fire hazard classification.
- Underburning operations would be restricted to spring-like conditions when the maximum duff layer retention can be attained and minimum course woody debris and snag retention requirements (USDA/USDI 1994b, p. C-40) can be achieved.

Additionally, consistent with the RMP and recommended by the Standard Operating Procedures Guide for soils, the following PDFs would be implemented on FNR soils to further reduce impacts to soils and reduce erosion.

- Lop-and-scatter activity slash over yarding corridors then across remaining FNR soils in unit. Where slash quantity is such that lop-and-scatter treatment alone would result in an increase in the fire hazard classification, handpile and burn high concentration areas outside yarding corridors during spring like conditions.

  The above protection measures incorporate the recommendations for operations on fragile and sensitive soils as advised by the Medford RMP and the BLM standard operational procedures guide for soils (BLM, 2010).

Riparian Reserve Thinning Treatments

Streams in the Planning Area are dependent on large wood to help reduce stream energy, capture sediment and smaller organic debris, create aquatic habitat, and provide other channel and ecosystem functions. Increasing the amount of large wood in streams is a

key component of watershed restoration, and the ROD/RMP (USDI 1995) encourages applying "…silvicultural treatments to restore large conifers in Riparian Reserves."

Of the 1,125 acres of Density Management and Variable Density Thinning treatments that are proposed, 72 acres would be thinned in the Riparian Reserve. Riparian Reserves proposed for thinning are generally dominated by smaller diameter Douglas-fir and ponderosa pine stands that have a substantial midstory or overstory hardwood component. All stands are lacking in the multiple canopy structure, large wood debris, downed logs, and large tree structure desired in Riparian Reserves. Thinning of dense Riparian Reserves would reduce competition on the retained trees for light, nutrients, water and growing space, allowing trees would develop larger canopies, display better vigor and put on diameter growth faster than if left untreated. Treatments in Riparian Reserves would be specifically designed to promote the development of future large woody debris, a healthy mix of riparian species, and multi-story canopies. These treatments would result in minor increases in soil disturbance on up to 8.6 acres during yarding operations. However by implementing treatments that retain overstory legacy trees that already provide desired future large woody debris and wildlife habitat, and thinning from below to reduce competition, these treatments would improve the overall riparian quality in approximately 10-20 years. Additionally, following use, the skid trails in Riparian Reserves would be sub-soiled, water barred, closed, or mulched with native seed, reducing water concentration and routing. The use and subsequent decommissioning of pre-existing but unrecovered skid roads in Riparian Reserves would provide a benefit for water quality and aquatic resources by reducing sediment delivery and re-establishing canopy cover on riparian roads.

Riparian Reserve stands would be treated using cable and ground based yarding to extract usable products, improve stand condition, and reduce fire danger. Landings and landing piles would be placed outside of Ecological Protection Zones in all units except 13-12, 28-11, 28-17, and 9-15. For these units, existing roads located in the EPZ may be utilized as landings as needed. Use of these roadside landings would not create any additional compaction or remove any shade. These landings would utilize the road surface for equipment but some brush and understory trees removal would occur within 50 ft of the road for safe operation of yarding and log loading equipment. No shade trees would be cut. To prevent any measurable sediment from entering an adjacent stream during use, sediment control devices would be properly installed between the landing and the stream prior to activities. These sediment barriers would be placed, maintained, monitored, and removed in accordance with the Oregon Department of Environmental Quality ODEQ Erosion and Sediment Control Manual (2005) by the purchaser and contract administrator. These barriers would remain onsite until all bare soils are stabilized and road drainage is re-established.

BMPs would be applied to ensure that erosion from all actions would remain onsite and would not result in stream sedimentation. A list of BMPs that would be implemented is provided in Section 2.3.2.4 Best Management Practices and Project Design Features. Together these BMPs would ensure the following:

- The magnitude and extent of affected area is minimized to reduce erosion;
- Compacted areas utilized are rehabilitated and stabilized to protect from chronic erosion and adverse impacts to watershed hydrology;
- Adequate buffers are implemented to protect all components of water quality based on the type, extent, and magnitude of the proposed activities' impact.

EPZs were designed to ensure that erosion remains onsite and water quality is not affected. The full Riparian Reserve distance for non-fish bearing streams in this Planning Area is 180 ft. The EPZ distance for streams in this project ranges from 75 to 180 ft (by slope distance). This distance is measured outward, on both sides of the stream, from the stream bankfull height or edge of the inner gorge (whichever distance is greatest). The EPZ would be applied along streams to protect stream channel structure and water quality (Best Management Practice, RMP p.154). Each EPZ distance is developed using stated protection criteria for individual elements of the Riparian Reserve including:

- Bankfull and flood stage streambank stability;
- Shade and stream temperature;
- Surface erosion of streambanks and slopes;
- Fluvial erosion of the stream channel;
- Soil productivity;
- Habitat for riparian dependent species;
- Stream ability to dissipate and transmit energy downstream;
- Transportation of LWD to downstream fish bearing waters; and
- Riparian microclimate

The Ecological Protection Width Needs chart (Northwest Forest Plan) is based on slope and rock type, and takes into account protection of streams from "surface erosion of streamside slopes, fluvial erosion of the stream channel, soil productivity, habitat for riparian-dependent species, the ability of streams to transmit damage downstream, and the role of streams in the distribution of large wood to downstream fish bearing waters" USDA/USDI 1994b, p. B-14).

Within the EPZ, no overstory trees would be removed and no Density Management or Variable Density Thinning activities would occur. If understory treatments are necessary to reduce fire hazard or improve stand health, they could occur in the EPZ, but not within 25 ft (bankfull width) of a stream. Lop-and-scatter treatments and handpiling would be allowed concurrent with commercial thinning treatments occurring outside the EPZ. Handpile burning and underburning operations would occur at a minimum of 12 months following the implementation of adjacent VDT and DM treatments to ensure ground vegetation that could be trapping erosion from yarding activities is not removed. Erosion from understory thinning treatments is minimal and would remain onsite. These types of treatments are performed using low to moderate burn intensities that leave sufficient vegetation and ground litter on the ground for trapping the small amount of soils that is displaced during these actions. All soil disturbances resulting from these activities would be indistinguishable from background levels within 1-2 years.

Other than the above mentioned roadside landings, no commercial thinning activities would occur in the EPZ. Treatments in the Riparian Reserves that are outside the EPZ would maintain a canopy cover above 50% to ensure microclimate is maintained. Trees selected for removal would primarily be suppressed upland conifer species. In the Riparian Reserves, riparian dependent species, legacy overstory trees, and hardwoods would be maintained as necessary to ensure the diversity of the stand. Activities in this area would be designed to ensure that habitat conditions for the wildlife and plant species that use this zone are not degraded.

Implementation of standard PDFs that limit the extent and magnitude of erosion, as well as the EPZs for Density Management and no treatment zones for understory thinning activities, would ensure erosion remains onsite and water quality is maintained.

Roads

Temporary Route Construction, Reconstruction, and Decommissioning

There is a total of 1.47 miles of temporary route construction/reconstruction, and subsequent decommissioning proposed for access to units and extraction of timber. The table below identifies unit accessed, approximate temporary route length, location on the slope, soil type/TPCC fragile classification, and type of construction.

Table 13: Proposed Temp Road work within TPCC classification

Unit Accessed	Temporary Route Length (~miles)	Location on Slope	Soil Type/ TPCC fragile classification	Type of Construction
1-2	0.19	Upper Slope ~ 100 feet below ridge	7F - Beekman-Colestine complex	New temporary
1-2	0.06	Upper Slope ~ 100 feet below ridge	7F - Beekman-Colestine complex	New temporary
1-2	0.08	Upper Slope ~ 100 feet below ridge	7F - Beekman-Colestine complex	New temporary
9-2A	0.30	Upper Slope ~ 200 feet below ridge	6F - Beekman-Colestine complex, 78F – Vannoy silt loam, 79F – Vannoy-Voorhies complex	New temporary
9-14	0.08	Valley Bottom	53D – Manita loam	Reconstruction
17-4	0.19	Upper Slope ~ 400 feet below ridge	21F – Cornutt-Dubakella complex	Reconstruction

Unit Accessed	Temporary Route Length (~miles)	Location on Slope	Soil Type/ TPCC fragile classification	Type of Construction
15-5A	0.12	Upper Slope ~ 500 feet below ridge	72F – Speaker-Josephine gravelly loams, 87F – Woodseye rock outcrop complex	New temporary
17-4	0.06	Upper Slope ~ 500 feet below ridge	21F - Cornutt-Dubakella complex	New temporary
25-17	0.05	On Ridge	48F – Josephine gravelly loam	New temporary
31-1B	0.24	On Ridge	78F – Vannoy silt loam	New temporary
31-1B	0.06	On Ridge	78F – Vannoy silt loam	New temporary
31-1B	0.05	On Ridge	78F – Vannoy silt loam	New temporary

Through implementation of the PDFs, temporary route construction, reconstruction, and decommissioning impacts to soils would be minimized. There would be a short term impact to soil function on approximately 5.4 acres, as well as an increase in onsite erosion for 1-3 years until ground vegetation recovers. For 0.27 miles of re-constructed routes, required sub-soiling would help to rehabilitate sites with long-term damage from past actions. This would result in a net improvement to soil resources on approximately 0.5 acres.

Portions of three temporary routes would be constructed on slopes that would require cut and fill construction into units: 17-4A (0.06 miles), 9-2A (0.3 miles), and 15-15A (0.12 miles). Decommissioning of all temporary routes that utilize fill material to construct the running surface of the road would include placement and stabilization of fill material back over the route bed following sub-soiling, but prior to surface erosion stabilization treatments. This would greatly reduce the hydrologic impact of constructing these roads because it would stabilize fill material and allow for ground water flow patterns to be reestablished. All other temporary routes are expected to be constructed without the use of cut and fill or full bench construction.

The temporary route proposed for reconstruction to access Unit 9-14 would be 0.30 miles in length and would be reconstructed over an existing drivable roadbed. This route would be located on slopes ranging from 5-20%. The intermittent stream crossed by this roadbed has interrupted flow, and has been field verified as being dry during the hauling season. Re-construction, use, and decommissioning of this roadbed would occur during the dry season of a single year. If any water is present in the channel where it crosses the roadbed during any portion of the work period, in-stream work BMPs would be implemented (See Section 2.3.2.4). Following use, the roadbed would be sub-soiled, seeded, mulched, and have slash placed to stabilize soils. Banks of the stream channel would be pulled back 2 to 1 from bankfull, and the channel would be armored, through

the entire disturbed area, to prevent future instances of accelerated erosion during winter flows. This crossing will be discussed further under Section 3.6 Water Quality: Stream Sedimentation.

Other than temporary route to Unit 9-14, all other proposed temporary routes would be located on the upper slope or ridge, outside of the EPZ, and would be hydrologically disconnected from streams and wet areas. Therefore construction, use, and decommissioning of these roads would not result in any change to watershed hydrology or water quality.

Road Haul Activities and Road Maintenance

There are 79.3 miles of existing road and 1.7 miles of new temporary routes proposed for haul and maintenance. Of the existing roads, approximately 17.7 miles are paved surface county roads. The surface, ditchlines, culverts, and cross drains of these roads are maintained by the county and would not be maintained as part of this action. There are additionally 3 miles of bituminous (paved), 31.7 miles of aggregate (rocked), and 26.9 miles of native surface roads that would be used for haul, and maintained as necessary. Two of these rocked roads proposed for hauling would be located outside the Planning Area within the Shanks Creek-Grave Creek HUC 6 sub-watershed. These roads are actually one haul route that is broken into two number segments that identify the upper and lower portions of the road. These segments are generally referred to as McCoy Creek road, and are numbered as 34-5-9 and 34-5-15. The total length of these two road segments is 4.46 miles. Because all harvest units would require the use of a hydrologically connected rocked or natural surface road to haul extracted materials, hauling would be restricted to the dry conditions. Additionally, in locations where the 2 road crosses, or is within 50 ft of critical habitat for SONC Coho, sediment barriers would be installed as necessary to ensure that no sediment reaches the stream.

Under Alternative 2, rocked and native surface haul roads would receive road surface, ditchline, and culvert maintenance as necessary to protect the integrity and drainage of the road during use. Newly constructed or reconstructed temporary roads would be utilized and decommissioned with little or no maintenance activities. The proposed haul and road maintenance on rocked and natural surface roads would contribute to accelerated erosion at different levels depending on the moisture levels of the road surface during haul, and the type of maintenance applied. Utilizing roads for haul only during dry conditions would minimize the amount of erosion.
All haul routes are located on TPCC restricted soils. Primarily TPCC soils adjacent to haul roads are for reforestation restrictions that require PDF implementation to meet forested stocking levels. There would be no impact to these reforestation soil classifications from road maintenance or haul actions because road right-of-ways are permanently excluded from the timber base, and stocking levels do not need to be maintained.

On approximately 2.4 miles, road maintenance actions could be performed on FNR lands where needed. Another 0.22 miles of road maintenance could be implemented on FMR soils if necessary. Road maintenance activities such as road and ditchline shaping, blading, brushing, and spot-rocking, in areas where subgrades, surfacing, or ditchlines are

in poor condition, would result in episodic instances of accelerated erosion within the first season, but would result in an overall improvement of existing drainage and reduce chronic erosion. To minimize the amount of erosion from hauling and road maintenance activities on FNR and FMR soils the following PDFs would be used.

- Additional drainage features that are added during road maintenance activities on FMR would be located away from steep draws and would be designed to disperse water back into the hillside.
- Downspouts or energy dissipaters would be utilized for drainage outlets on FMR soils.
- Ground cover would be retained to the greatest extent possible during maintenance on both FNR and FMR lands to protect from excessive erosion.

Existing road 34-6-13.1C would require approximately 500 ft (centerline distance) of reconstruction to widen a hairpin turn that is currently unsafe for haul. During reconstruction activities at least three ditch relief culverts would be installed to disperse water that is presently flowing within the existing ditchline off the road. The upper most culvert would replace and existing plugged culvert, a second culvert would be placed 75 to 100 ft below that which will discharge out on an existing bench. The third culvert would be on the main road where there are signs of exiting erosion. All culverts would be installed with a rip rap splash pad at the culvert outlet to dissipate water and reduce erosion. The curve widening itself would not modify the outside fill slope, rather, the widening would redistribute cutslope material from the inside of the curve where the original curve was constructed. Material taken from the inside of the curve would be redistributed and compacted along the running surface of the road through the curve area to flatten the grade as much as possible as this is adverse haul. Installation of culverts would redistribute water and reduce the current chronic erosion occurring as a result of a insufficient number of culverts and lack of road maintenance.

All roads used for hauling would be maintained as necessary to prevent road damage and excessive erosion, or exceeding State turbidity standards for water quality. PDFs would be utilized to minimize erosion from hauling and road maintenance actions. Where hydrologically connected, maintenance and hauling activities on rocked and natural surface roads would result in localized instances of offsite erosion at stream crossings and where roads are adjacent to, and in close proximity to streams. These effects will be discussed further in Section 3.6 Water Quality: Stream Sedimentation.

Summary of Effects for Soil Erosion

Because of the type of actions proposed, and the PDFs that would be implemented, there would be no instances of chronic erosion or excessive soil displacement that would occur as a result of the Proposed Action of this project. The magnitude and extent of soil erosion from all activities associated with the Proposed Action would be consistent with the impact analysis and conclusions provided in the1994 Medford RMP EIS.

3.5.2.3 Alternative 2 (Proposed Action) - Cumulative Effects to Soil Erosion and Sensitive Soils

There are two foreseeable federal projects in the Jumping Bean Ecological Forestry Project Planning Area: the Shorthorn Gulch Land Parcel Saleand 308 acres of non-commercial silvicultural treatments under the 2012 Silviculture Practices- Reforestation, Young Stand Management, and Forest Condition Restoration Treatments (FY12-FY17).

The Shorthorn Gulch Land Parcel Sale is proposed within the Jumping Bean Ecological Forestry Project in T34S-R5W-Section 30. This potential land sale of 0.66 acres to resolve an inadvertent trespass is adjacent to Jumping Bean's Unit 30-4. This land is already impacted by its current infrastructure, including a portion of the house, a graveled road, and a paved driveway. There are serpentine soils with no trees growing on the parcel of land that is proposed for sale. As such, it would not be expected that there would be any change from the current conditions of the soil or water resources as a result of this sale. If this land is sold, it would no longer be within the jurisdiction of BLM's management, including soils management.

The potential 308 acres of non-commercial silvicultural treatments include 213 acres of Pre-commercial Thinning and 95 acres of pruning would be outside of the Jumping Bean Ecological Forestry Project Activity Area, but within the project's Planning Area. . Since yarding of material would not occur for these treatments, anticipated erosion would be limited to low levels that would remain onsite, and due to BMPs would not affect water quality.

Erosion would occur in conjunction with scheduled and emergency road maintenance activities under the Medford District Road Maintenance Categorical Exclusion. These actions would be limited to within the road right-of-way and would be done using BMPs to protect from offsite erosion. These road activities are ongoing actions on Medford BLM lands, and have been further refined to reduce the instances and magnitude of offsite or excessive erosion. These actions would therefore be expected to maintain or reduce current erosion levels from roads in the future.

The two rocked roads proposed for haul, that are located outside the Jumping Bean Ecological Forestry Project Planning Area, could potential be utilized concurrently for hauling during the Lower Grave Timber Sale. These two roads are located within a in the Shanks Creek-Grave Creek HUC 6 sub-watershed. These roads are actually one haul route that is broken into two number segments that identify the upper and lower portions of the road. These segments are generally referred to as McCoy Creek road, and are numbered as 34-5-9 and 34-5-15. The total length of these two road segments is 4.46 miles. This entire road was recently rocked, and would only be used and maintained during dry conditions to reduce erosion.

Soil impacts resulting in erosion as a result of all federal projects discussed above are consistent with the impact analysis and conclusions provided in the 1994 Medford RMP EIS.

There are no other current or future federal projects planned at this time within this Planning Area. However, this does not imply that future projects would not be considered at a later date if stand conditions warrant treatment.

Erosion from land management actions across all ownerships in this Planning Area would be expected to remain consistent with current levels over the long term, but may vary from year to year. While some new roads would be constructed, erosion from roads is likely to remain at current levels or may even decrease in the future since road design and construction practices have been greatly improved from the practices used when legacy roads were constructed. Older legacy roads in poor locations, or that were poorly constructed would likely continue to be decommissioned and rerouted, or upgraded in the future as projects and funding occurs.

It would be expected that new harvest actions would be implemented across all ownerships that would result in erosion and compaction. Based on past harvest trends, acres impacted by non-federal harvest would be expected to be between 500 - 600 acres during the next 5 years. Actions on non-federal lands could potentially require hauling on the proposed haul routes and would be expected to remain consistent with the Clean Water Act. At times when hauling would occur concurrently with haul for the Jumping Bean Ecological Forestry Project, the standard would remain the same for the amount of allowable turbidity within streams. As such, the impacts to soils and erosion would be minimized and would remain primarily onsite.

Broadcast burning, pile burning, and other activity fuels treatments would be expected to continue on non-federal lands. All actions would be required to be done in accordance with Oregon Forest Practices Act requirements. Treatment of activity fuels and site preparation of units will likely result in accelerated erosion, stream sedimentation, and localized chemical alterations to the soil and water.

The extent of the impact to soils from non-federal harvest related actions is not known. However, due to improved practices the magnitude of these impacts would be expected to be equal to, or less than, those that have occurred during past timber management activities and would be expected to be compliant with the Oregon Forest Practices Act.

As such, erosion from the combined hauling actions of the non-federal and federal projects would be expected to be consistent with, and within the magnitude of, the impacts that were discussed for hauling in the direct and indirect impacts of Alternative 2, and would be consistent with the analysis and conclusions provided in the1994 Medford RMP EIS. Sedimentation resulting from these actions is discussed further in Section 3.6, Cumulative Impacts to Water Quality. There are no overlapping actions from any federal or non-federal projects that would occur within the proposed treatment units.

3.6 Water Quality: Stream Sedimentation

3.6.1 Affected Environment Water Quality: Stream Sedimentation

Methodology

In this analysis, the sub-watershed scale or smaller is used to better detect potential effects of the project near the site of proposed actions. The rationale is that adverse (or beneficial) effects to water resources are easier to detect in smaller catchments (Bosch and Hewlett 1982) and as one nears the treatment site.

Planning Area Watersheds

The Planning Area is located within the Middle Rogue and Lower Rogue subbasins, in portions of three watersheds; the Jumpoff Joe Creek, Grants Pass- Rogue River, and Grave Creek watersheds. The term watershed is used in reference to a 5th field level. The Jumpoff Joe Creek watershed is approximately 69,733 acres or 109 mi^2. The Grants Pass- Rogue River watershed totals approximately 53,809 acres or 84.1 mi^2, and the Grave Creek watershed is approximately 104,529 acres, or 163.3 mi^2. This Planning Area encompasses a total of approximately 56,109 acres within these watersheds.
The Planning Area boundary follows the nearest watershed ridgelines that are above all proposed project units, temporary route construction and reconstruction, road maintenance, and identified haul routes. As a result, the ridgelines that define this Planning Area follow several different sub-watershed and drainage boundaries. A sub-watershed refers to a smaller, 6th field level. Affected sub-watersheds in this Planning Area are shown below in 13.

Table 14: Sixth-Field Watersheds in the Planning Area

Watershed (5th field)	Sub-watershed (6th field)	Area* (mi^2)	Area* (Acres) & Percent of Total Sub-watershed Acres	Variable Density Thinning Acres	Commercial Density Thinning/ Hazardous Fuels Reduction Acres	Non-Commercial Hazardous Fuels Reduction/ Understory Treatments Acres	Percent of Sub-watershed* Treated
Jumpoff Joe Creek	Middle Jumpoff Joe Creek	18.5	11,835 (100%)	126	0	23	1.3%
	Upper Jumpoff Joe Creek	28.6	18,294 (100%)	139	455	612	6.6%
	Louse Creek	31.1	19,929 (100%)	190	182	511	4.4%
Grants Pass-Rogue River	Savage Creek-Rogue River	7.7	4,905 (23%)	32	0	54	1.8%
Grave Creek	Shanks Creek-Grave Creek	1.8	1,146 (9%)	0	0	0	0%**
Totals			56,109	487	637	1,200	4.1%

*Approximate acres/square miles that are within Planning Area
** Units were deferred during analysis, but haul route would still enter this watershed

All proposed units and most of the proposed haul roads for the Jumping Bean Ecological Forestry Project are within the Jumpoff Joe Creek and Grants Pass- Rogue River watersheds. There is one haul route for this project that is located within the Grave Creek watershed. Table 14 shows the locations of the project by sub-watershed. Portions of these five sub-watersheds comprise the overall analysis area for water resources. Where only a percentage of the sub-watershed is in the Planning Area, smaller drainage basins were delineated along ridgelines to encompass project actions.

Climate

The Planning Area is within the Klamath Mountains Ecoregion and has a Mediterranean type of climate characterized by cool, wet winters and warm, dry summers. The two closest weather stations to the Planning Area are Sexton Summit Weather Station and Grants Pass Weather Station. Sexton Summit Weather Station is located within the Jumpoff Joe Creek watershed at an elevation of 3,836 ft. Temperatures recorded range from an average low of 30.5^{o} F in January to an average high of 75.1^{o} F. In the valley, average temperatures are slightly higher. The Grants Pass Weather Station located three miles outside the Jumpoff Joe Creek watershed at 1063 ft., shows average temperatures ranging between 32.3^{o} F and 89.8^{o} F. Extended summer drought is common. The majority of precipitation is in the form of rain; however, snow occurs at higher elevations in most years. Precipitation varies from near 30 inches per year in the southwest of the Planning Area to approximately 54 inches/year in the northeast portions. Approximately 90 percent of the yearly total falls in the months October to May. The volume of stream flow closely parallels the precipitation pattern. Peak stream flows occur from November to March, and low stream flows occur from July to October. Small 1st and 2nd order headwater streams are often intermittent and have no surface flow during the dry season in most years. Intermittent and small perennial streams are located within or adjacent to several of the proposed treatment units.

Sedimentation

Sediment input to stream channels is a result of both natural and management related processes. Primary sediment sources include: mining, forest management, motorized recreation, and episodic landslides and slumps usually associated with intense winter storms, hillslope erosion, stream bank erosion and roads. Forest management related increases in sedimentation are most often the result of poorly designed and/or poorly maintained forest roads. These roads can be a major contributor of fine sediment to streams (Wemple and Jones, 2003).

There are no streams in the Planning Area currently listed by ODEQ as impaired by excess fine sediment. As discussed above in Section 3.5 Soil Erosion and Sensitive Soils, the only actions associated with this project that would result in offsite erosion that could lead to stream sedimentation is road maintenance, haul, and the reconstruction and subsequent decommissioning of the temporary route into Unit 9-14. Some roads in the Planning Area show evidence of surface erosion, inadequate drainage, inadequate stream crossings or unstable cut-banks and fill slopes. Where hydrologically connected these roads are likely to provide excess fine sediment to adjacent streams. Field inspections of the proposed haul route showed multiple locations with the potential for accelerated

sediment delivery. Roads contribute to stream sedimentation at different levels depending on the depth and quality of rock, type of use, location, maintenance frequency, and moisture levels of the road surface during use. BLM managed lands in the Grants Pass Resource Area limit use of rocked and natural surface roads to dry conditions to reduce erosion and protect road surface integrity. Within the Planning Area approximately 51% of proposed haul roads are hydrologically connected to streams. Along rocked or natural surfaced roads, and paved roads that could receive ditchline maintenance, there are a total of 76 intermittent and 81 perennial stream crossings. Approximately 90% of these cross first and second order headwater streams.

Designated beneficial uses for the Jumpoff Joe Creek watershed include; public and private domestic water supply; industrial water supply; irrigation; livestock watering; fish and aquatic life; wildlife and hunting; fishing; boating; water contact recreation; and hydropower. Within the Grants Pass-Rogue River watershed, beneficial uses include; domestic, and industrial water supply, irrigation water supply, livestock watering, fish and aquatic life, wildlife, hunting, fishing, boating, recreation, aesthetic quality, hydroelectric power, and commercial navigation and transportation. Beneficial uses within the Grave Creek watershed include public, domestic, and industrial water supply, irrigation, livestock watering, anadromous fish passage, salmonid fish rearing and spawning, resident fish and aquatic life, wildlife, hunting, fishing, boating, water contact recreation, aesthetic quality, and hydroelectric power.

The Oregon Department of Environmental Quality (ODEQ) is responsible for establishing water quality standards to protect beneficial uses and aquatic life in Oregon streams. Currently ODEQ does not have established criteria for measuring sediment. The current water quality standards instead address turbidity, a measure of water clarity. These standards are primarily based on an Environmental Protection Agency (EPA) recommendation from 1976. ODEQ is in the process of revising the water quality standards for turbidity based on the best available science regarding the effects of turbidity on beneficial uses, in particular aquatic life (http://www.deq.state.or.us). This standard does not necessarily correlate with the amount of sediment entering the stream. Stream surveys completed in the Jumping Bean Planning Area indicate that water quality and stream bed quality for aquatics within and adjacent to harvest units is generally in good condition. Within less than 10% of the streams surveyed, one or both of these was rated as fair. Skid trails and roads that are crossing or adjacent to streams were reported to be the primary cause. Stream bank stability was more variable with approximately one-third of the streams exhibiting some signs of susceptibility or active erosion that caused the rating to fall into the fair category.

3.6.2 Environmental Effects on Water Quality: Stream Sedimentation

3.6.2.1 Alternative 1 (No Action) - Effects on Water Quality: Stream Sedimentation

Sedimentation from harvest actions across all ownerships within these sub-watersheds would be expected to remain consistent with current levels over the long term, but may vary from year to year. Currently, road density within these sub-watersheds is 5.1 mi/mi^2. For this element, this is above the 3 mi/mi^2 threshold for “not properly functioning” for aquatic species by the National Marine Fisheries Service (NMFS)

(USFWS/NOAA Fisheries Table of Population and Habitat Indicators, USDA et al. 2004b). Though some new roads would be constructed outside currently proposed federal actions, sediment from roads is likely to remain at current levels or may even decrease in the future since road design and construction practices provide for greater consideration of water quality and aquatic resources than the practices used when legacy roads were constructed. Older legacy roads in poor locations, or that were poorly constructed would likely continue to be decommissioned and rerouted, or upgraded in the future as projects and funding occurs.

Harvest actions on non-federal land would continue to be implemented within this Planning Area. It is expected that this harvest would remain consistent with current harvesting trends. Past trends have resulted in between 500 - 600 acres of non-federal harvest taking place every 5 years. Sedimentation from harvest actions and road construction on non-federal lands within this Planning Area would be expected to remain consistent with current levels over the long term, but may vary from year to year. These projects would be expected to be consistent with the Oregon Forest Practices Act, the Clean Water Act and the Endangered Species Act. These acts provide a threshold for water quality and aquatic impact that would suggest that actions affecting water quality and aquatic habitat on non-federal lands would maintain current conditions.

Under Alternative 1, erosion and stream sedimentation would occur in conjunction with scheduled and emergency road maintenance activities under the Medford Road Maintenance Categorical Exclusion. These actions would be limited to within the road right of way and would be done using BMPs to protect from offsite erosion and ensure compliance with Oregon water quality standards for turbidity. These are ongoing actions on Medford BLM lands, and have been further refined to reduce the instances and magnitude of offsite, excessive erosion, or stream sedimentation. These actions would therefore be expected to maintain or reduce current erosion levels from road maintenance in the future.

Areas of short-term localized sediment input could potentially occur as a result of proposed road maintenance and hauling activities that would be associated with the Birdseye Jones Timber Sale in this Planning Area. The Birdseye Jones Timber Sale is currently un-awarded pending a Biological Opinion from the U.S. Fish and Wildlife Service. As such, it would not be expected that this sale would occur concurrently with the Jumping Bean Ecological Forestry Project. If implemented, stream sedimentation from this action would be regulated using BMPs to protect water quality. Sediment from these actions would be within ODEQ water quality standards, the Clean Water Act, and is within the scope of anticipated effects to aquatic resources analyzed in the Medford District PRMP EIS (USDI 1994).

There are no other current or future federal timber sale projects planned at this time within the Planning Area. However, this does not imply that future projects would not be considered at a later date if stand conditions warrant treatment. Water Quality impacts that will result from all federal projects discussed above are consistent with the Clean Water Act and the impact analysis and conclusions provided in the1994 Medford RMP EIS.

3.6.2.2 Alternative 2 (Proposed Action) - Effects on Water Quality: Stream Sedimentation

Roads: Temporary Route Construction, Reconstruction, and Decommissioning

There is a total of 1.7 miles of temporary route construction/reconstruction, and subsequent decommissioning proposed for access to units and extraction of materials. With the exception of the temporary route that would be reconstructed to access unit 9-14, all temporary routes proposed for either construction or reconstruction would be located on the upper slope or ridge, outside of the EPZ, and would be hydrologically disconnected from streams and wet areas. Three routes on the upper slope would be expected to have some portions of the routes that would require cut and fill construction. In total these three routes are 0.48 miles in length. Following use, these routes would be sub-soiled; would have fill material pulled back up and stabilized on the roadbed; and would then receive surface erosion treatments. Sub-soiling, then pulling and stabilizing fill back on the surface would reestablish groundwater flow. Surface stabilization and establishment of drainage features as necessary, would ensure that accelerated erosion is minimized and remains onsite, for all except the temporary route into Unit 9-14. Therefore the construction, use, and decommissioning of all roads, except the route into Unit 9-14, would not result in any change to watershed hydrology or water quality.

The temporary route proposed for reconstruction to access Unit 9-14 would be 0.27 miles in length and would be reconstructed over an existing drivable roadbed. This route would be located on slopes ranging from 5-20%. The intermittent stream crossed by this roadbed has interrupted flow, and has been field verified as being dry during the hauling season. Re-construction, use, and decommissioning of this roadbed would occur during the dry season of a single year. If any water is present in the channel where it crosses the roadbed during any portion of the work period, in-stream work BMPs would be implemented (See Section 2.3.2.4). Following use, the roadbed would be sub-soiled, seeded, mulched, and have slash placed to stabilize soils. To ensure protection of water quality in the future, the banks of the stream channel at the existing road crossing location, would be pulled back 2 to 1 from bankfull, and the channel would be armored, through the entire disturbed area, to prevent future instances of accelerated erosion during winter flows.

Though all actions associated with this temporary route would all be implemented using sediment control devices and BMPs to minimize erosion and impacts to water quality, actions associated with the initial reconstruction, use, and subsequent decommissioning of this road would likely result in a short-term, localized increase in erosion to the channel. This erosion would be expected to become suspended sediment during the first few high flow events following the decommissioning of this route. Because BMPs would be implemented and the sediment control devices would be placed and properly maintained during the entire duration of all actions associated with this route, it would be expected that the sediment entering the stream channel from this action would not result in visible turbidity, and would be indiscernible from the background levels that would be typically seen during early season storms. Deposition of fine sediments could occur at capture points for the first 50 to 100 ft downstream, following the decommissioning of this route. The extent of these deposits would not be of a magnitude to alter

macroinvertebrate populations and would be indiscernible following the first few rains. Effects to water quality from the reconstruction, use, and decommissioning of this route would not be discernible within any other streams in this Planning Area. Because decommissioning of this existing road would reconnect the surface drainage of this channel, this action would result in a long-term improvement to stream function and water quality.

Haul Activities and Road Maintenance

There are 79.3 miles of existing road and 1.7 miles of new temporary routes that are proposed for haul and maintenance. All natural surface roads are hydrologically disconnected from streams. Of these, approximately 17.7 miles are paved surface county roads. The roads are maintained by the county and would not be maintained as part of this action. There are additionally 3 miles of bituminous (paved), 31.7 miles of aggregate (rocked), and 26.9 miles of native surface roads that would be used for haul, and maintained as necessary. Because all harvest units would require the use of a hydrologically connected rocked or natural surface road to haul extracted materials, hauling would be restricted to the dry conditions.

Two of these rocked roads proposed for hauling would be located outside the Planning Area within the Shanks Creek-Grave Creek HUC 6 sub-watershed. These roads are actually one haul route that is broken into two number segments that identify the upper and lower portions of the road. These segments are generally referred to as McCoy Creek road, and are numbered as 34-5-9 and 34-5-15. The total length of these two road segments is 4.46 miles, most of which is hydrologically connected to tributaries channels of McCoy Creek. This entire road was recently rocked and would only be used and maintained during dry conditions for protection of water quality.

Best Management Practices and Project Design Features for road related activities would reduce and in some cases eliminate sediment from entering stream channels. Under Alternative 2, rocked and native surface haul roads would receive road surface, ditchline, and culvert maintenance as necessary to protect the integrity and drainage of the road during use. Where roads are connected to streams, sediment would enter stream channels.

Well vegetated ditchlines would reduce the amount of sediment reaching stream channels. During the dry condition haul there is no water flowing on the road surface or in ditchlines, so sediment delivery to streams would be minimal. Sediment derived from hauling would be primarily directed to ditch lines and then out of ditchlines via ditch relief culverts to the forest floor. Sediment directed to hillsides by ditch-relief culverts would filter into the soil before reaching stream channels. However, some sediment directed to ditchlines during hauling could move off-site during winter rains. Sediment control devices would be installed in some instances to trap and store sediment which would further reduce sediment delivered to streams. Additionally, in locations where BLM road #35-5-21crosses, or is within 50 ft of critical habitat for SONC Coho, sediment barriers would be installed as necessary to ensure that no sediment is reaching the stream. Road maintenance completed prior to and after haul would further reduce the amount of off-site sediment movement during and after haul.

The amount of sediment which would reach stream from haul and maintenance actions would not result in visible turbidity during use, and would be indiscernible from background levels that would be typically seen during early season storms. Deposition of fine sediments could result at capture points within 25 ft, downstream of stream crossings within smaller tributaries. The extent of these deposits would not be of a magnitude to alter macroinvertebrate populations and would be indiscernible following the first few rains. Effects to water quality from hauling and road maintenance would not be discernible from background levels within the larger tributary or mainstem streams within this Planning Area.

On BLM road #35-5-21, additional sediment control barriers would be placed and maintained to ensure that there would be no sediment delivery to Critical Habitat for Endangered Coho salmon from actions associated with this project. See Appendix 1, T/E Fish Species or Habitat for more detailed information.

The amount of fine sediment introduced to streams during haul activities on all other haul routes would be indiscernible beyond natural erosion processes occurring during winter rains and would have negligible impacts to downstream resources. The use of these roads is expected to be short term and limited by weather conditions as specified in the site specific Project Design Features. Where sediment would reach stream channels as a result of road activities, it would not cause a visible increase in stream turbidity or a reduction in macroinvertebrate populations. Changes in embeddedness, interstitial spaces, and pool depth would not occur. An overall reduction in chronic sediment entering streams would occur on some sections of haul road following road maintenance because these road activities would improve currently impaired road drainage. These actions would therefore not exceed State of Oregon water quality standards and would not result in any measurable effects on aquatic habitat. Alternative 2 is also consistent with the standards and guidelines set forth under the 1994 Medford RMP EIS.

Cumulative Effects to Water Quality: Stream Sedimentation

There are two foreseeable federal projects in the Jumping Bean Ecological Forestry Project Planning cumulative effects analysis area: the Shorthorn Gulch Land Parcel Saleand 308 acres of non-commercial silvicultural treatments under the 2012 Silviculture Practices- Reforestation, Young Stand Management, and Forest Condition Restoration Treatments (FY12-FY17).

The Shorthorn Gulch Land Parcel Sale is proposed within the Jumping Bean Ecological Forestry Project in T34S-R5W-Section 30. This potential land sale of 0.66 acres to resolve an inadvertent trespass is adjacent to Unit 30-4 of the Jumping Bean Ecological Forestry Project. This land is already impacted by its current infrastructure, including a portion of the house, a graveled road, and a paved driveway. There are serpentine soils with no trees growing on the parcel of land that is proposed for sale. As such, it would not be expected that there would be any change from the current conditions of the soil or water resources as a result of this sale. If this land is sold, it would no longer be within the jurisdiction of BLM's management, including soils management.

The potential 308 acres of non-commercial silvicultural treatments include 213 acres of Pre-commercial Thinning and 95 acres of pruning would be outside of the Jumping Bean Ecological Forestry Project Activity Area, but within the project's Planning Area. These treatments would not result in any change to water resources (see Section 3.5).

Stream sedimentation would occur in conjunction with scheduled and emergency road maintenance activities under the Medford Road Maintenance Categorical Exclusion. These actions would be limited to within the road right of way and would be done using BMP's to protect from offsite erosion and ensure compliance with Oregon water quality standards for turbidity. These are ongoing actions on Medford BLM lands that are implemented to reduce the instances and magnitude of excessive erosion or stream sedimentation. Since the impacts from road maintenance action would not be indiscernible from background levels outside the affected reach or following the first rains of the season within the affected reach, these impacts would not contribute to a cumulative long term reduction in water quality or aquatic habitat. Long-term sediment reductions due to the proposed road work would improve stream conditions and benefit aquatic habitat within the analysis area at a site specific scale.

The two rocked roads proposed for haul, that are located outside the Jumping Bean Planning Area, could potential be utilized concurrently for hauling during the Lower Grave Timber Sale. These two roads are located within a in the Shanks Creek-Grave Creek HUC 6 sub-watershed. These roads are actually one haul route that is broken into two number segments that identify the upper and lower portions of the road. These segments are generally referred to as McCoy Creek road, and are numbered as 34-5-9 and 34-5-15. The total length of these two road segments is 4.46 miles. This entire road was recently rocked, and would only be used and maintained during dry conditions to reduce erosion.

There are no other federal actions currently planned that would result in changes in water quality within this Planning Area.

Cumulative effects of past land management practices on federal and non-federal lands have contributed to the current reductions in water quality and aquatic habitat within the analysis area. Sedimentation from harvest actions and road construction on non-federal lands within these sub-watersheds would be expected to remain consistent with current levels over the long term, but may vary from year to year. These projects would be expected to be consistent with the Oregon Forest Practices Act, the Clean Water Act and the Endangered Species Act. These acts provide a threshold for water quality and aquatic impact that would suggest that actions affecting water quality and aquatic habitat on non-federal lands would maintain current conditions.

Ongoing actions on non-federal lands would likely require hauling on some of the proposed haul routes. These actions would be expected to remain consistent with the Clean Water Act. At times when hauling would be occur concurrently with haul for the Jumping Bean Ecological Forestry Project, the standard would remain the same for the amount of allowable turbidity within streams. As such, additional BMP requirements for federal hauling actions would, in some locations, result in an overall reduction in sediment entering streams from non-federal haul during concurrent hauling activities.

Having multiple projects within this Planning Area would not cumulatively change the magnitude of impacts, or the extent of the impacts that was analyzed for the direct and indirect effects of the Jumping Bean Ecological Forestry Project for the following reasons; Federal and state laws limit the magnitude of potential stream sedimentation; the impacts to water quality from these projects are of a short term nature; and each of the projects that are occurring within the same watershed during the same time period are in dispersed locations. Logically it can be concluded that negligible increases in sediment from these activities would contribute to the overall amount of sediment entering streams from past, present, and future impacts within these sub-watersheds, but sediment from these actions would be within ODEQ water quality standards, the Clean Water Act, and is within the scope of anticipated effects to aquatic resources analyzed in the Medford District PRMP EIS (USDI 1994).

3.7 Northern Spotted Owl (Threatened) and its Critical Habitat

3.7.1 Affected Environment for Northern Spotted Owl and its Critical Habitat

Scale of Analysis

Under this environmental analysis, the direct and indirect effects to the northern spotted owl from the Proposed Action are analyzed at both the Project and Planning level scales. The Activity Area is defined as the footprint of all units proposed for treatment.

The Planning Area includes all the land within the larger hydrologically defined boundary, in this case a large portion of the Jumpoff Joe 5th field watershed and a small portion of the Grants Pass-Rogue River 5th field watershed, and the Grave Creek 5th field watershed. These scales were used because spotted owls are wide ranging species and these scales provide adequate coverage to analyze effects to multiple sites that may be affected by the project.

The BLM completed a Biological Assessment (BA) in conjunction with the U.S. Fish and Wildlife Service (USDI BLM 2013) to assess the impacts from the proposed Jumping Bean Ecological Forestry Project to spotted owls in compliance of Section 7 of the Endangered Species Act. For the BA, the Jumping Bean Ecological Forestry Project was evaluated at both the local (Project Units) and provincial level (Klamath Province). Consultation was completed with USFWS. A Biological Opinion (BO) was received April 12th, 2013 (#01EOFW00-2013-F-0091).

Range-wide Status and Trends

Northern spotted owls (*Strix occidentalis caurina*) (NSO) are a federally listed threatened species and are closely associated with old forests for nesting, foraging, and roosting throughout most of their range (Forsman et al., 1984; Carey et al., 1990; and Solis and Gutierrez 1990). The ideal NSO habitat consists of large trees in the overstory, smaller trees of varying sizes and species in the lower and middle story, large standing and fallen dead trees, and patchy shrub and herb communities (Spies and Franklin, 1991).

The Bureau of Land Management (BLM), Forest Service (FS), and U.S. Fish and Wildlife Service (USFWS) have conducted a coordinated review of four reports containing information on the northern spotted owl. The reviewed reports include the following:

- Scientific Evaluation of the Status of the Northern Spotted Owl (Sustainable Ecosystems Institute, Courtney et al., 2004);
- Status and Trends in Demography of Northern Spotted Owls, 1985-2003 (Anthony et al., 2004);
- Northern Spotted Owl Five Year Review: Summary and Evaluation (USFWS 2004); and
- Northwest Forest Plan – The First Ten Years (1994-2003): Status and trend of northern spotted owl populations and habitat, PNW Station Edit Draft (Lint 2005).

Anthony et al., (2004) published meta-analysis of owl demographic data collected in 14 demographic study areas across the range of the northern spotted owl. Four of the study areas are in western Washington, six are in western Oregon, and four are in northwestern California. Although the agencies anticipated a decline of NSO populations under land and resource management plans during the past decade, Anthony identified greater than expected NSO population declines in Washington and northern portions of Oregon, and more stationary populations in southern Oregon and northern California. However, Anthony (2010) stated that that there is now an apparent decline in spotted owl occupancy in the Southern Cascades Study Area while the presence of barred owls is increasing.

These reports listed above did not find a direct correlation between habitat conditions and changes in NSO populations, and they were inconclusive as to the cause of the declines. Even though some risk factors had declined (such as habitat loss due to harvesting), other factors had continued, such as habitat loss due to wildfire, potential competition with the barred owl, West Nile virus, and sudden oak death (USFWS 2004b; Lint 2005). The barred owl is present throughout the range of the spotted owl, so the likelihood of competitive interactions between the species raises concerns as to the future of the spotted owl (Lint 2005).

In more recent reports (Davis et al., 2010; Forsman et al., 2011), it has become more evident that the barred owl population is increasing across the range of the northern spotted owl. Forsman (2011) indicates that the spotted owl populations have declined across most of the range, with the most significant declines occurring in Washington where the barred owl has been present the longest. Although analysis within the nearest NSO demography study (Klamath Study Area, or KSA) to the Activity Area indicates a stable spotted owl population during the study period, the recent data shows the beginning of a trend towards a declining population (Davis et al., 2010). Davis et al., (2010) states that:

> "There is mounting evidence that barred owls are negatively impacting spotted owl population within the KSA. This is illustrated by several population trends beginning about 2003, which is when barred owl detections within the KSA exceed 10% of the

sites. Spotted owl detections have been steadily decreasing since 2002 and reached the lowest point in 2010, the same year barred owl detections reached their highest level. Fecundity rates appear to be declining during the past 8 years and in only 1 of those 8 years was the rate above average. Fecundity rates for sites with known barred owl presence were lower than at other sites. If these trends continue a combination of lower occupancy and reduced fecundity, there may be cause for concern regarding the spotted owl population."

On June 30, 2011, the USFWS released the *Revised Recovery Plan for the Northern Spotted Owl* for public comment (USFWS 2011). This Revised Recovery Plan recommends achieving recovery of the spotted owl through 1) the retention of more occupied and high-quality habitat, 2) active management using ecological forestry techniques, both inside and outside of reserves, 3) increased conservation of spotted owls on State and private lands, and 4) the removal of barred owls in areas with spotted owls. The plan recommended retaining the Northwest Forest Plan reserve network while the Service completed a habitat modeling framework to develop and the new critical habitat network for the spotted owl.

The original foundation for spotted owl recovery was the 1994 Northwest Forest Plan (NWFP). Management direction and land allocations in the standards and guidelines of the NWFP are intended to constitute the Forest Service and BLM contributions to the recovery of the northern spotted owl (USDA/USDI 1994b). The NWFP provides a network of late-successional reserves, 100-acre Known Spotted Owl Activity Centers (KSOACs), connecting riparian corridors, and connectivity blocks across the lands within the Plan area.

Project Specific Spotted Owl Information

For the purposes of this analysis, the vegetation within the Jumping Bean Planning Area was typed into habitat categories pertinent to the northern spotted owl. These habitat types are distinct and not over-lapping and are used throughout this document to describe and quantify habitat conditions across the landscape. These habitat categories are as follows:

Nesting, Roosting, and Foraging (NRF) Habitat for the spotted owl consists of habitat used for nesting, roosting, and foraging as well as dispersal habitat. Generally, this habitat is multistoried, 80 years old or more (depending on stand type and structural condition), and has sufficient snags and down wood to provide opportunities for nesting, roosting, and foraging. The canopy closure generally exceeds 60 percent, but canopy closure or age alone does not qualify a stand as spotted owl NRF habitat. Other attributes of NRF habitat include: a high incidence of large trees with various deformities (e.g., large cavities, broken tops, mistletoe infestations, and other evidence of decadence); large snags; large accumulations of fallen trees and other woody debris on the ground; and sufficient open space below the canopy for spotted owls to fly (Thomas et al., 1990).

Spotted owl NRF habitat in southwest Oregon is typified by mixed-conifer forest, recurrent fire history, patchy habitat components, and a relatively high incidence of

woodrats, a high quality spotted owl prey species in the Klamath Province (Forsman et al., 1984; 2004, Ward et al. , 1998; Hamer et al., 2001).

Forsman et al., (1984) described some of the differences in NRF habitat within the Klamath Mountains Province that are typical of large parts of the Medford District:

> "—Eighty-one percent of all nests in northwestern Oregon were in cavities, compared to only 50 percent in the Klamath Mountains. These differences appeared to reflect regional differences in availability of the different nest types. Dwarf mistletoe infections in Douglas-fir (and numerous debris platforms that were associated with dwarf mistletoe infections) were common in the mixed coniferous forests of the Klamath Mountains and the east slopes of the Cascades, but did not occur in western Oregon."

Forsman et al., (1984) documented the range of nest trees for platform nests (n=47) as 36 to 179 cm (14.2 to 70.5 inches) diameter at breast height (dbh) averaging 106cm (41.7 inches) dbh. Mistletoe is occasionally used as a nesting substrate in southwest Oregon, which sometimes makes smaller trees suitable as nest trees. For spotted owls, features that support nesting and roosting habitat typically include a moderate to high canopy (70 to 90 percent); a multistoried, multi-species canopy with large overstory trees (greater than 30 inches dbh); a relatively high incidence of larger trees with various deformities, including mistletoe, large snags, large accumulations of fallen trees and wood on the ground; and flying space (Thomas et al., 1990). NRF habitat also functions as dispersal habitat.

Structurally complex habitat, as defined by Recovery Action 32 (RA32) in the 2011 Final Northern Spotted Owl Recovery Plan is a sub-set of NRF habitat. Under the NSO Recovery Plan, the U.S. Fish and Wildlife Service recommends agencies maintain substantially all of the older and more structurally complex, multilayered conifer forests on federal lands (USFWS 2011). These forests are characterized as having large diameter trees; high amounts of canopy; and decadence components such as broken-topped live trees, mistletoe, cavities, large snags and large coarse wood. Stands proposed for Variable Density Thinning in the Jumping Bean Ecological Forestry Project Activity Area were evaluated to determine if any areas met the structurally complex habitat definition. Stands evaluated and meeting the definition are referred to as RA32 stands. Through field evaluations, 186 acres were determined to meet RA32 stand conditions and were withdrawn from consideration for treatment. All areas proposed for noncommercial treatments (Hazardous Fuels Reduction) would be assessed to determine if RA32 stand conditions are present prior to implementation. Any areas identified as RA32 would be dropped from treatment.

Dispersal-Only Habitat is a subcategory of all dispersal habitat for northern spotted owls. Thomas, et al. (1990), defined dispersal habitat as forested habitat more than 40 years old, with canopy closure more than 40 percent, average diameter greater than 11 inches, and flying space for owls in the understory but does not provide the components found in NRF. It provides temporary shelter for owls moving through the area between NRF habitat and some opportunity for owls to find prey, but does not provide all of the

requirements to support an owl throughout its life. Dispersal will be used throughout this document to refer to dispersal-only habitat.

Unsuitable Habitat for the northern spotted owl is forest land that currently does not meet either the NRF or Dispersal-only habitat definitions. Lands classified in this condition are made up from two sub-classifications: 1) habitat capable lands are capable of becoming suitable habitat in the future but are currently not functioning as habitat (i.e., young plantations), or 2) non-habitat lands are site limited and will never provide habitat (i.e., meadows, open oak woodlands, agricultural fields, human habitations).

All existing habitat within the Planning Area was categorized into one of the three categories of spotted owl habitat described above. The habitat values were derived from two sources: 1) in areas that do not have proposed commercial treatments, habitat values were obtained from a BLM GIS (Geographical Information System) dataset developed and used for a more extensive owl analysis representing NSO habitat values across BLM lands (BLM 2008d), and 2) in areas that are proposed for commercial treatments, field visits were conducted in 2012 by BLM wildlife technicians and biologists to further identify and delineate the habitat values within those areas.

Habitat on lands other than BLM administered lands were only categorized into NRF or not NRF, and thus areas identified as not NRF were assigned into an unclassified category that is composed of either dispersal only or unsuitable habitat quality.

Figure 9: Northern Spotted Owl (NSO) habitat types and Revised NSO Critical Habitat in the Planning Area

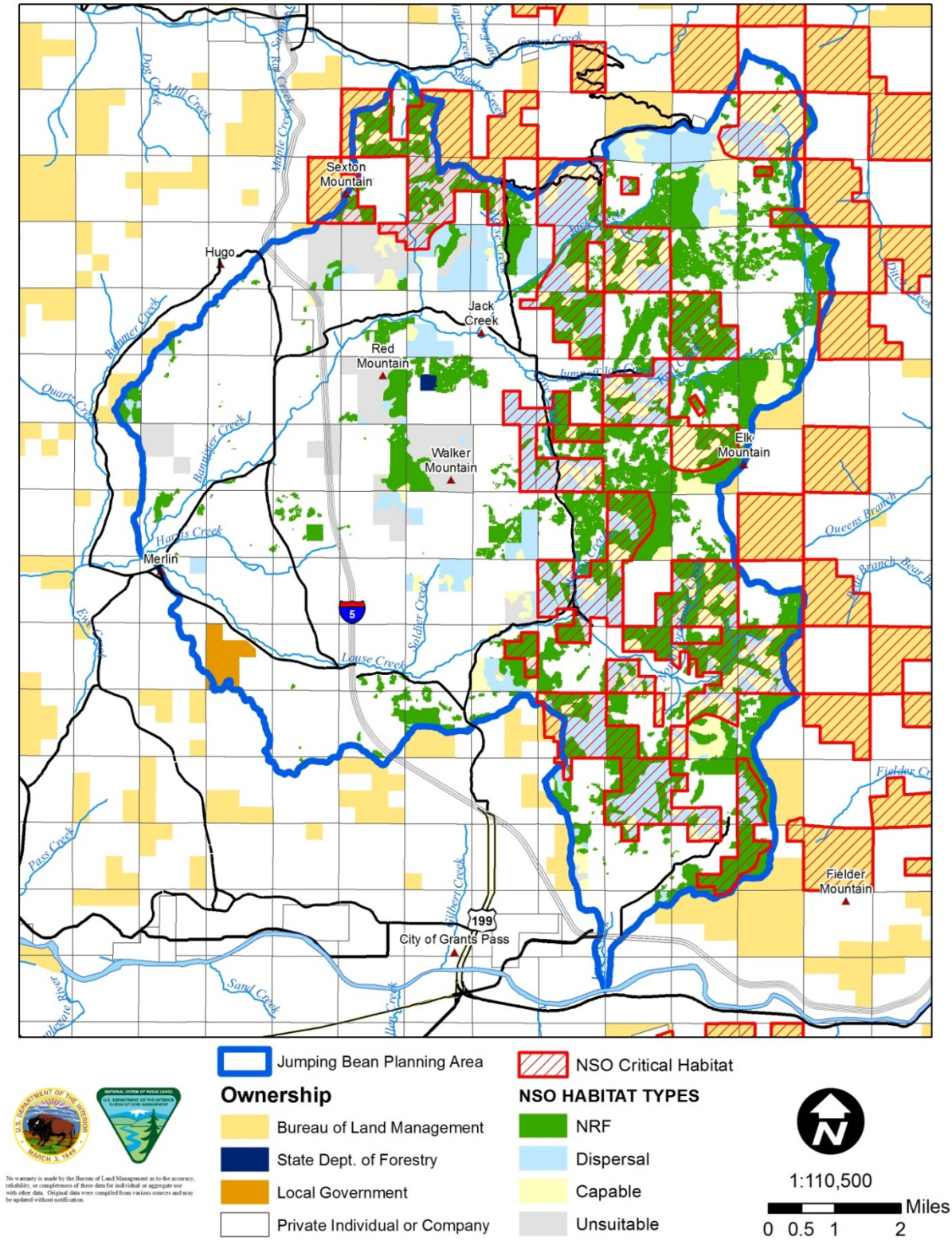


Table 15: Acres of NSO Habitat Type in the Planning Area

Habitat Type	Ownership			TOTAL
	BLM	Local / State GOV'T	Private	
Nesting, Roosting & Foraging (NRF)	7,692	4	5,650	13,346
Dispersal Only Habitat	5,900	*	*	5,900
Unsuitable Habitat	6,934	*	*	6,934
* = Unclassified (not NRF)	0	333	29,596	29,929
TOTAL	20,526	337	35,246	**56,109**

The present-day composition and distribution of vegetation within the Activity Area is influenced by site characteristics (soil types, aspect, and topography), natural disturbance (wildfires, insects, disease, etc.) and anthropogenic activities, including historical mining, rural residential development, agricultural activities, timber harvest, fuels reduction projects, fire suppression, and road building. Common forest types include Douglas-fir, Jeffrey pine, ponderosa pine, white fir and white oak forest series (USDI BLM 1998). Approximately 37% of the lands within the Planning Area are administered by BLM, 63% is privately owned and a very small percentage (<1%) is local or state government.

It is expected that private timber lands would be managed for primary timber production and harvested on a 50-80 year rotation. As a result, northern spotted owl habitat is expected to be mostly confined to federally-managed lands. Private lands within the Planning Area currently contain 42% of the total existing NRF habitat within the Planning Area, while BLM lands contain 58% of the existing NRF habitat present across the Planning Area.

Specific to the Jumping Bean Ecological Forestry Project Activity Area, there are 20 NSO sites with at least a portion of their home range (1.3 mile radius from the center of activity) that overlaps with the general Planning Area Figure 10). The survey history for each NSO site with the Planning Area is variable. Most recently, a number of calling routes were surveyed within the planning area over the last two breeding seasons (2011 & 2012). For purposes of this analysis all, sites are conservatively assumed to be occupied.

Spotted Owl Critical Habitat

Critical habitat, as defined in Section 3 of the Endangered Species Act, is "the specific areas within the geographic area occupied by a species…on which are found those physical or biological features essential to the conservation of the species…" (USFWS 2012). These features are referred to as the primary constituent elements which support

the life history requirements of the species include, but are not limited to, the following: (1) Space for individual and population growth and for normal behavior; (2) Food, water, air, light, minerals, or other nutritional or physiological requirements; (3) Cover or shelter; (4) Sites for breeding, reproduction, and rearing (or development) of offspring; and (5) Habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of the species.

As the U.S. Fish and Wildlife Service (USFWS) noted in its Biological Opinion on the NWFP, for a wide-ranging species such as the spotted owl, each Critical Habitat Unit (CHU) has both a local role and a range-wide role (USFWS 1994, p.20). Impacts from proposed harvest therefore are evaluated based upon removal, downgrading, and maintaining of suitable (nesting, roosting, foraging) habitat and dispersal habitat, and are evaluated at both the local level and the provincial level.

Critical Habitat for the NSO was first designated in January 1992 (USFWS 1992), and was revised in 2008 (USFWS 2008a). Most recently, the USFWS completed another revision to the NSO Critical Habitat, resulting in the current designation of the final Revised 2012 Critical Habitat for the NSO (USFWS 2012). The Revised 2012 Critical Habitat for the NSO designation is the current statutory designation and countermands all other previous designations.

The Jumping Bean Ecological Forestry Project Planning Area overlaps a portion of the Revised 2012 Critical Habitat for the NSO, specifically a portion of the KLE 3 Subunit of the Klamath East Habitat Unit (Map 10). Approximately 12,407 acres of the KLE 3 Subunit are within the Jumping Bean Planning Area boundary, encompassing approximately 60% of the federal lands within the Planning Area.

Special management considerations or protection are required in this subunit to address threats to the essential physical or biological features from current and past timber harvest, losses due to wildfire and the effects on vegetation from fire exclusion, and competition with barred owls. This subunit is expected to function primarily for east-west connectivity between subunits and critical habitat units, but also for demographic support. This subunit facilitates northern spotted owl movements between the western Cascades and coastal Oregon and the Klamath Mountains.

3.7.2 Environmental Effects on Northern Spotted Owl and its Habitat

3.7.2.1 Alternative 1 (No Action) - Effects on Spotted Owl and its Habitat

Under the No Action Alternative, no vegetation management would be implemented and there would be no direct effects to NSOs or other wildlife species on BLM-administered lands. Forest stand conditions would continue to develop along the general current trends toward higher density stand conditions, especially in the understory, than what was historically present in the area. It is likely that many of the stands within the Activity Area would eventually contain tree densities two to three times that of historical levels (Hardy and Arno, 1996). The majority of the lower elevation forest stands in the Planning Area exhibit stand conditions that are the result of fire exclusion.

Under the No Action Alternative, the current stand conditions would likely develop into less complex stand structures and species compositions than that of late-successional stands (Sensenig 2002), or at the very least, would require a much longer time scale to develop (Tappeiner et al., 1997). Unthinned stands would remain at a higher risk of stand-replacement fire than if the stands were thinned. Habitat conditions would remain generally unchanged at the unit scale in the short term unless a major disturbance such as fire, wind, ice, insects, or disease occurred.

In southwest Oregon, the reduction in fire frequency has reduced the role of fire as an ecological factor, influencing stand development and altering historical forest structures, processes, and functions. The forest habitat and structure within the Planning Area would be most affected in the long term by competition of overstory trees. Overstocked stand conditions would result in relatively slow growth rates that would prolong crown differentiation. Eventually, some trees would become dominant and shade out suppressed trees. These trees would stand as small-diameter snags and ultimately fall, but would not create openings as occur in late-seral stands because of their small size. The remaining dominant trees would soon expand their crowns into the newly-available growing space, increasing the effects of mortality on understory vegetation. Multiple waves of such competition mortality would occur before dominant tree density would be low enough for understory reinitiation. This growth trajectory would be unfavorable to the development of mature and late-successional forest attributes. These processes are discussed in further detail in the fire hazard and vegetation portions of this EA (Sections 3.2 and 3.3, and Appendix 3).

The No Action Alternative would not alter the current habitat conditions across the Activity Area, and the NSOs that inhabit and utilize the Jumping Bean Planning Area would not be impacted from any loss of habitat or project related disturbance. NSOs would be expected to behave and utilize the habitat within the Activity Area in the same fashion as they have in the past.

Under the No Action Alternative, no loss of NRF or dispersal habitat would be expected across the Planning Area from active forest management. Estimating the potential loss of NRF or dispersal habitat due to wildfire or other disturbance events is a much more difficult and enigmatic question. The recent trends in Southwest Oregon illustrate that fire has been converting mature forest structure at a higher rate than harvest, making the retention of these types of forests problematic in dry forested ecosystems (Courtney et al., 2004; Spies et al., 2006).

In general terms, wildfire would remain the most immediate hazard to late-successional forest habitat (NRF) and its associated species (Courtney et al., 2004), including the NSO. High severity fires could be expected to remove or downgrade habitat in a stochastic pattern across the landscape, setting back forest succession and development, and likely resulting in the loss of large tree structure critical to late-successional forest habitat dependent species. High severity fires resulting from these dense stand conditions would cause more severe impacts to soils, which may prolong the recovery and colonization of mycorizzal processes, and macroinvertebrate and small mammalian prey food webs important to suitable foraging areas for spotted owls.

BLM standard road maintenance, including activities such as road surface, ditch, road bank and fills, hazardous tree removal, culvert replacement, would continue to occur and not downgrade the spotted owl habitat. Temporary and permanent right-of-way construction would continue on private lands and potentially on BLM consistent with reciprocal right-of-way agreements to allow private harvesting, resulting in the potential for removal of suitable and dispersal habitat.

3.7.2.2 Alternative 2 (Proposed Action) - Direct and Indirect Effects on Spotted Owl and its Habitat

As detailed in Chapter 2 of this document, a suite of management activities are proposed under Alternative 2 that are designed to achieve multiple objectives, including: reduction of vegetation density, reduced risk of high-severity fire, increased growth and vigor of residual trees, increased heterogeneity in terms of stand and species composition across the landscape, and commodity production. Table 16 below describes the proposed treatments and what NSO habitat type they would occur in across the Activity Area.

During the development of the Jumping Bean Ecological Forestry Project, a landscape level plan was developed that would delineate a proportion of the landscape that would serve as areas of dense, closed-canopy contiguous forests, within which minimal to no treatments would be proposed. These areas, which are called Late-Successional Emphasis Areas (LSEAs) are designed to provide larger dense forest blocks (300-500 acres) of fairly contiguous mature and late-successional habitat conditions where existing habitat is minimally altered by active management. The treatments under Alternative 2 were then designed around the LSEAs, with a goal of strategically locating treatments around the LSEAs to meet the restoration goals at the stand level outside of, and in select locations within these important LSEAs. This strategy provides a measure of protection to the LSEAs by reducing the chance of high severity fire activity reaching the LSEAs.

Table 16: Acres of Proposed Treatment Types within Northern Spotted Owl Habitat

Treatment Type	NRF	Dispersal	Unsuitable	Total
Variable Density Thinning	226	261	0	488
Density Management / Hazardous Fuels Reduction	61	461	115	637
Hazardous Fuels Reduction	484	478	240	1,201
Grand Total	771	1,200	355	2,326

Generally, the effects of habitat modification activities and the duration of those effects on spotted owls depend upon the type of silvicultural prescriptions used and the location of the harvest relative to habitat. When discussing changes to spotted owl habitat, the following definitions are used to describe the anticipated effects of the activities associated with the Proposed Action to the NSO habitat types within the Jumping Bean Ecological Forestry Project Activity Area:

1) A **Downgrade** of NSO habitat means to alter the function of spotted owl NRF habitat so the habitat no longer supports nesting, roosting, and foraging behavior, but would retain enough tree cover to support spotted owl dispersal. Downgrade is defined when the canopy cover in a NRF stand drops to 40-60 percent at the stand level, and when conditions are altered such that an owl would be unlikely to continue to use that stand for nesting, roosting and foraging. Downgraded NRF continues to provide habitat for dispersal.

2) A **Treat and Maintain** of NRF or dispersal habitat means an action or activity would occur within NRF or dispersal habitat but would not change the habitat classification post treatment. The NRF stand would retain an average of 60 percent canopy cover post treatment, large trees, multistoried canopy, standing and down dead wood, diverse understory adequate to support prey, and may have some mistletoe or other decay. Dispersal habitat would continue to provide at least 40 percent canopy, flying space, and trees 11 inches diameter at breast height (dbh) or greater, on average. The habitat classification of the stand following treatment would be the same as the pretreatment habitat classification.

All of the treatments proposed under Alternative 2 can be assigned into one of the general effect types listed above. These classes of effects are used to assess the treatment impacts to the existing habitat present within the Planning Area. Canopy closure is used as one of the critical habitat thresholds because it is highly important to NSO nest site selection and general habitat use because increased levels of canopy afford protection from predators, and regulate temperature extremes (Courtney et al., 2004). However, canopy cover alone is not the only important habitat element to NSOs. Other important components are structural diversity (vertical layering and mistletoe clumps, crown structure and complexity), decadence features (including snags, down logs, cavities and broken top trees), sufficient space for easy flight beneath the overstory and access to prey.

Approximately 488 acres of Variable Density Thinning (VDT) are proposed as part of the Jumping Bean Ecological Forestry Project; these VDT treatments are anticipated to result in a downgrade of 147 acres and a treat and maintain of 80 acres in NRF habitat and 261 acres of treat and maintain in dispersal habitat. The VDT treatment is the only treatment proposed that would result in a habitat downgrade in some limited locations. All of the density management and hazardous fuels reduction treatments proposed under the Jumping Bean Ecological Forestry Project are anticipated to result in a treat and maintain effect to the habitat type where these activities are implemented, or are expected to have no effect in unsuitable habitat. Table 17 illustrates the type of habitat where these treatments are proposed, and the potential effect to each habitat type that would result under full implementation of Alternative 2.

In their entirety, the treatments proposed under Alternative 2 would result in a total of 147 acres of NRF downgrade across the Planning Area, or a reduction of 0.7% of the NRF habitat on federal lands within the Planning Area. An additional 624 acres of treatments in NRF habitat throughout the Planning Area would result in the treatment and maintenance of 8% of the existing NRF habitat on federal lands. Approximately 1,200 acres of proposed treatments would occur within dispersal-only habitat, which would

directly impact 20.3% of the dispersal-only habitat on BLM lands, or 8.8% of all dispersal habitat (combined NRF and dispersal-only) on BLM lands.

Table 17: Treatment Effects to NSO habitat type on BLM land in the Planning Area

Habitat Type	Pre-Project Acres (%)	Downgrade	Treat and Maintain	Post-Project Acres (%)	Percent change
NRF	7,692 (37.5%)	147	624	7,545 (36.8%)	-0.7%
Dispersal-only	5,900 (28.7%)	0	1,200	6,047 (29.4%)	+0.7%
Unsuitable	6,934 (33.8%)	0	355 (No Effect)	6,934 (33.8%)	0
Total	**20,526**	**147**	**2,179**	**20,526**	**NA**

Implementation of treatments that downgrade spotted owl NRF habitat have the potential to reduce nesting, roosting, and foraging opportunities in treated stands. The downgrading of NRF habitat is likely to result in some adverse impacts to NSOs by decreasing flying squirrel abundance by removing mid-story and overstory structure from those acres (Wilson 2010; Manning et al., 2011), which could reduce spotted owl foraging opportunities. Also, reducing canopy cover below 60 percent would likely increase predation risk to NSOs in these stands, and introduce ecological edge effects to the affected stands as well as to adjacent stands of NRF habitat, extending the area of impact beyond the treated areas. Harvest prescriptions that result in the downgrade of NRF habitat may remove some key habitat elements, including large diameter tree with potential nesting cavities or platforms, multiple canopy layers, adequate forest cover, as well as hunting perches used by spotted owls.

The remaining treatments associated with Alternative 2, would treat and maintain the existing habitat where treatments are proposed and would primarily impact NSO prey and foraging opportunities. These treatment effects are considered short-term negative effects to prey and are discussed in more detail under the “Effects to Northern Spotted Owl Prey” section of this chapter below.

When analyzing the impacts to spotted owls from timber harvest and other vegetation treatments, the amount, intensity and duration of the harvest are not the only factors to consider. A critical factor to consider is the spatial distribution of the habitat found across the landscape and where the proposed treatments would occur in relation to known NSO nest sites. The areas surrounding a NSO nest site can be delineated into three concentric circles. These concentric circles represent three scales of use during the course of breeding and non-breeding season.

These areas of use are defined as follows:

Nest Patch is the 300-meter radius area around a known or likely nest site (USDI et al., 2008). Research has shown that the habitat quality within 300 meters of a nest site (i.e.,

the nest patch) is critically important to determining nest site positioning across the landscape (Perkins et al., 2000).

Core Area is a 0.5-mile radius circle (approximately 500 acres) from the nest or center of activity to delineate the area most heavily used by spotted owls during the nesting season; it is included in the provincial home range circle. Core areas represent the areas which are defended by territorial owls and generally do not overlap the core areas of other owl pairs (USDI et al., 2008).

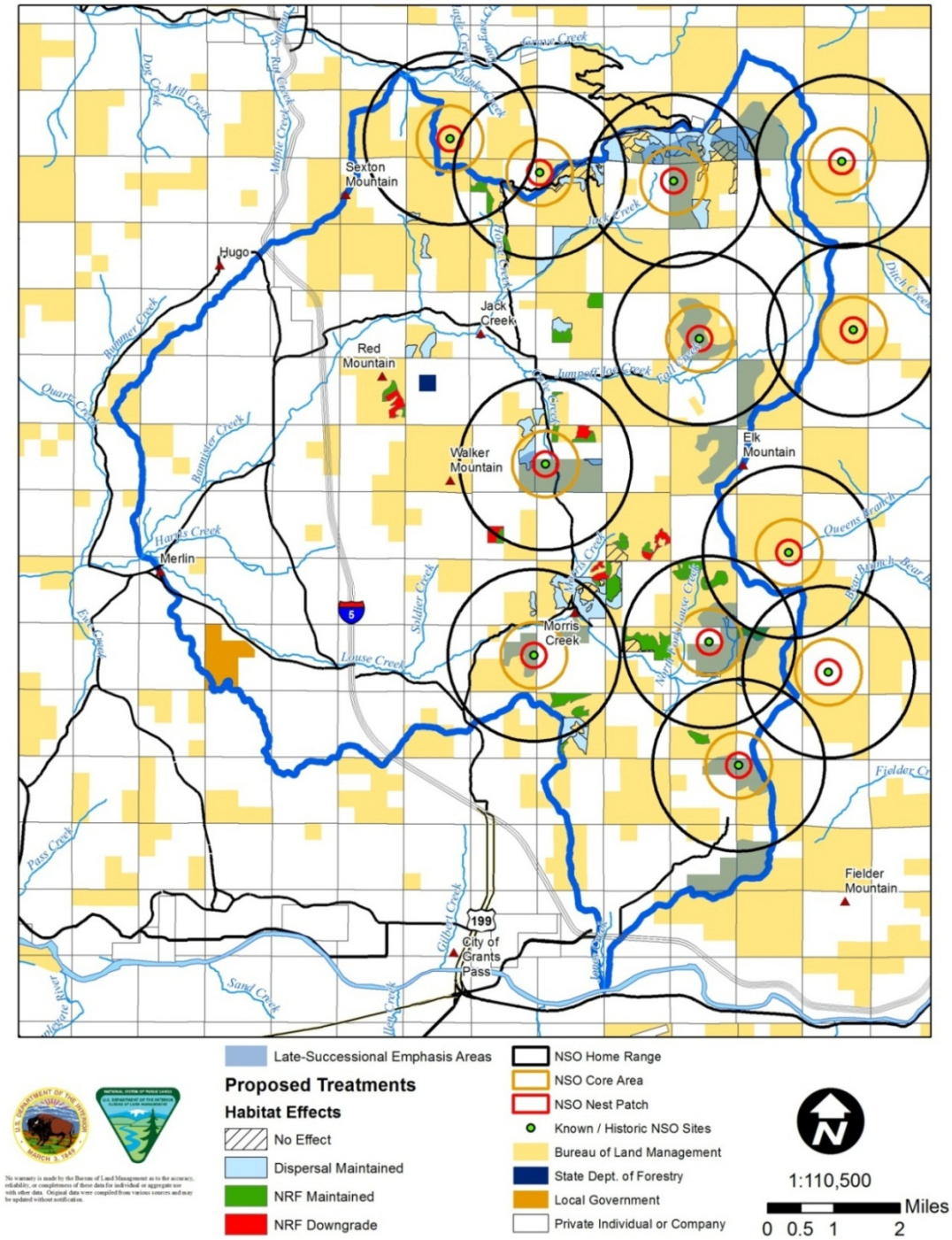
Provincial Home Range is defined by a circle located around an NSO activity center and represents the area owls are assumed to use for nesting and foraging in any given year. For the Klamath Mountains Province the home range is a 1.3 mile radius circle (approximately 3,400 acres (USDI et al., 2008). The home ranges of several owl sites may overlap.

Figure 16 depicts graphically the known NSO sites and the associated circles representing the above described areas of use for each site across the Planning Area. These three areas of use represent how NSOs utilize the forest environment around their nest sites, and the importance of the habitat located within each spatial scale to a given NSO pair. They also provide a better understanding of how habitat altering treatments may affect NSOs life functions depending on where the treatment would occur in relation to known NSO nest sites. A more detailed description of the scientific rationale for the development of these three scales is provided in in the Methodology for Estimating the Number of Northern Spotted Owls Affected by Proposed Federal Actions (USDI et al., 2008).

Under Alternative 2, no management activities of any kind are proposed in the Nest Patch of any known or historical NSO sites located within the Planning Area.

Within the Jumping Bean Ecological Forestry Project Planning Area, there are 8 cores (0.5 mile radius) that are associated with known NSO sites that overlap the Planning Area. Of these 8 cores, 4 have treatments proposed within a portion of the core. All proposed treatments in these core areas are designed to treat and maintain the existing habitat type where implementation is to occur. In total, 186 acres would be treated across all four core areas, including 8 acres of VDT, 54 acres of density management / hazardous fuels reduction and 124 acres of hazardous fuels reduction.

Figure 10: Northern Spotted Owl Sites in the Planning Area



Within the Jumping Bean Ecological Forestry Project Planning Area, there are 12 Provincial Home Ranges (1.3 mile radius) that are associated with known NSO sites that overlap the Planning Area. The Proposed Action would take place within at least a portion of the home range of nine of these historical northern spotted owl sites. In total, 1,686 acres would be treated across all nine home range areas, including 253 acres of VDT, 428 acres of DM and 1,005 acres of HFR. All but 36 acres of these proposed

treatments that would occur within the home range of NSO sites in the Planning Area are designed to treat and maintain the existing habitat type where implementation is to occur. There are 36 acres of VDT that would result in a NRF downgrade proposed to occur within the home range of one NSO site.

While the implementation of this project under Alternative 2 would result in the downgrade of 147 acres of NRF habitat to dispersal-only habitat, these treatments would have long term beneficial effects (30-50 years) to the forest structure and overall forest health. Treatments under Alternative 2 would reduce competition and increase the vigor of the residual trees left in the stand, while simultaneously reducing ladder fuels and decreasing the fire hazard rating of the stand. A specific goal of the prescription is to leave the largest and oldest trees in the stand, and retain all large hardwoods and snags. The majority of the physical structure of the habitat in the treatment areas would still be present after implementation. Therefore, the treatment effects to habitat are mostly related to changes in canopy cover and the understory composition.

The remaining 2,179 acres of treatments proposed to occur throughout the Planning Area would minimally alter the forest environment where the treatments are proposed, and are considered a treat and maintain treatment type. Therefore, these treatments would not result in any additional habitat downgrade. In total, 624 acres of NRF and 1,200 acres of Dispersal-only habitat would be treated and maintained. An additional 355 acres of unsuitable habitat would be treated, which would not affect NSOs, as this habitat type does not support any of the life functions of the NSO.

Overall, the spacing, timing and the retention of key habitat features as called for under the Project Design Features for this project (Section 2.3.3) are likely to avoid adverse impacts to spotted owls with respect to prey availability, although localized, short-term changes in prey species distribution and abundance are likely to occur within treated stands. The dispersion of treatment sites over a large area is especially important in maintaining spotted owl prey populations within the Planning Area. Residual trees, snags, and down wood retained in the treated stands would provide some cover for prey species over time and would help reduce harvest impacts to some prey species, such as dusky-footed woodrats. Treatment implementation would be spread out temporally and spatially within the Activity Area, which would leave untreated areas available for spotted owl foraging, reducing the impact of these effects at the project level.

The Proposed Action is anticipated to increase the health and vigor of the residual stands post treatment, starting after 10 years. All of these treatments are expected to have long term beneficial effects by reducing fuel loads and overstory tree competition, thereby reducing the risk of high-severity fire occurring in these treated areas (Gains et al, 2010), and increasing growth and vigor of the trees remaining within the treated areas (Roberts and Harrington, 2008). It is likely that the treated stands would develop into more complex, structurally diverse forests in the long term in comparison to the No Action Alternative. In fact, thinning dense stands may be necessary in order to achieve old-growth forest characteristics in the absence of natural disturbance events (Tappeiner et. al., 1997). Thinning younger forest stands may provide growing conditions that more closely approximate those historically found in developing old growth stands (Hayes et al., 1997). Many of the treatments as proposed under Alternative 2, especially those that

would occur in dispersal quality habitat would have long-term beneficial effects to NSOs by increasing growth rates of the residual stand and accelerating the development of late-successional old growth characteristics within the treated areas than would occur if left untreated.

Effects to Northern Spotted Owl from Roads

No new permanent roads would be built under Alternative 2. Approximately 1.2 miles of new temporary routes would be constructed and utilized to complete the commercial activities included in this project. After implementation is completed, these temporary routes would be decommissioned, including ripping, waterbaring, culvert removal, seeding and mulching, and barricading so they are inaccessible to vehicle traffic. An additional 0.54 miles of existing roads would be re-constructed in order to improve the road condition to allow for log truck hauling. All of the routes (both new temporary construction and re-construction) would be located on previous road beds and/or within areas proposed for harvest.

The effects of this road work to the NSOs present in the Planning Area from this route construction and re-construction are anticipated to be minimal. Edge effects from this construction would not be expected because all construction would occur within units proposed for timber extraction or in location already impacted by previous road construction. The unit level treatments would affect canopy cover and interior forest at the stand level greater than the effects to the route reconstruction. Therefore, the effects of the route construction are predicted to be less than those described for the thinning activities. The habitat where these routes are utilized would continue to function as dispersal habitat after implementation.

Effects to Northern Spotted Owl Prey

Treatments associated with Alternative 2 that would treat and maintain NSO habitat may impact NSO foraging by changing habitat for spotted owl prey species. Effects to spotted owl prey species, such as woodrats, northern flying squirrels and a host of small mammals, which are the primary prey of spotted owls in the Planning Area (Forsman et al., 2004), are expected to occur due to the treatments proposed under Alternative 2. However, quantifying those impacts is somewhat problematic due to limited information on prey species abundance for the Planning Area. Studies have shown variations of prey availability across different stands within the range of the spotted owl, which is likely reflected locally within the Planning Area as well.

Timber harvest and Hazardous Fuels Reduction/Pre-commercial Thinning treatments could impact NSO foraging by changing habitat conditions for prey. While some reports suggest negative impacts of thinning on flying squirrels (Wilson 2010; Holloway and Smith, 2011), there is also some counter research as to these effects (Gomez et al., 2005; Ransome et al. 2004; Waters and Zabel, 1995). Woodrats are important components of the spotted owls' diet in in the Planning Area (Forsman et al., 2004). Some beneficial effects to dusky-footed woodrats due to shrub development in thinned stands could be possible (Sakai and Noon 1993; Suzuki and Hayes, 2003).

Edges created from harvest can be areas of good prey availability and potentially increased prey vulnerability (i.e., better hunting for owls) (Zabel et al., 1995). Prey animals may be more exposed in the disturbed area or could move away from the disturbed area for the short-term. Changes in prey availability occur as cover is disturbed and prey species move around in the understory. As a result, they can become more vulnerable and exposed. The disturbance could attract other predators such as hawks, other owls, and mammalian predators. This may increase foraging competition for owls in the treatment area, but the exposure of prey would also improve prey availability for northern spotted owls.

Bingham and Noon (1997) reported that a spotted owl core area (closest to the nest) is the area that provides the important habitat elements of nest sites, roost sites, and access to prey, benefiting spotted owl survival and reproduction. Rosenberg and McKelvey (1999) reported that spotted owls are "central place" animals with the core area being the focal area. Several studies (Wagner and Anthony 1998; Dugger et al., 2005; Zabel et al., 2003; Bingham and Noon, 1997) indicate the core area size for the Klamath province is 0.5 miles from the nest site (or 500 acres). Therefore, effects to prey species are most critical at the nest patch and core areas.

Within the Jumping Bean Ecological Forestry Project, there would be no treatment within the nest patches of any known NSO sites and all treatment within core areas would treat and maintain the existing habitat. Due to the spatial distribution of the proposed treatments under Alternative 2, adequate and sufficient prey habitat would remain within the core areas and would continue to provide suitable foraging opportunities within the home range.

All of the treatments proposed under Alternative 2 would were designed to help reduce any negative effects to spotted prey species by incorporating untreated pockets (leave "islands" or "skips") throughout the treatment areas, with a goal of one acre left untreated for every six or seven acres treated (or approximately 15 percent). This strategy is expected to provide un-altered portions of the stand throughout the Action Area that have the potential to serve as refugia for spotted owl prey species during project implementation. Residual trees, snags, and down wood retained in the thinned stands would provide some cover for prey species over time, and would help further reduce any negative affects to spotted owl prey species.

Effects of Noise Disturbance to Northern Spotted Owls

Mandatory PDFs would be incorporated into the Proposed Action activities. Nesting owls are confined to an area close to the nest, but once the young fledge, they can move away from noise and activities that might cause them harm. Since all projects would follow mandatory PDFs that restrict activities to outside of the breeding season and beyond recommended disturbance distance thresholds, as established by the U.S. Fish and Wildlife Service, no harm to nesting owls, or their young, is expected from project related noise or activities.

Conclusions

In summary, Alternative 2 would have minimal negative impacts to the NSOs found within the Planning Area given that:

- No treatments would occur within the nest patch area of any known NSO site within the Planning Area;
- Downgrading of NRF habitat would be limited to 36 acres within one known NSO site at the home range scale;
- A very small amount (0.7%) of the total NRF habitat located within the Planning Area would be downgraded;
- The majority (94.2%) of existing NRF habitat within the Planning Area would not receive any treatments; and
- The majority of the proposed treatments (93.7%) are designed to treat and maintain the functionality of the habitat where the treatment occurs and these treatments would not reduce the overall amount of NRF or dispersal-only habitat found within the Planning Area.

Alternative 2 is expected to result in long-term beneficial effects to the NSOs found within the Planning Area by:

- Reducing the risk of high-severity fire occurring within the treated areas and/or reducing the risk of high-severity fire occurring in high value habitat areas identified as LSEAs;
- Increasing growth and vigor of the trees and vegetation remaining within the treated areas, and;
- Ultimately accelerating the development of the treated stands into more complex, structurally diverse forests in comparison to the No Action Alternative.

3.7.2.3 Environment Effects on Northern Spotted Owl Critical Habitat

3.7.2.4 Alternative 1 (No Action) - Effects on Northern Spotted Owl Critical Habitat

Under the No Action Alternative, the current stand conditions would likely develop into less complex stand structures and species compositions than that of late-successional stands (Sensenig 2002), or at the very least, would require a much longer time scale to develop (Tappeiner et al., 1997). Unthinned stands would remain at a higher risk of stand-replacement fire than if the stands were thinned.

Under the No Action Alternative, no treatments would occur within any NSO Critical Habitat Units. Similar to the description given for the No Action Alternative for NSOs (Section 3.6.2.1) forest stand conditions within the 2012 NSO Critical Habitat would continue to develop along the general current trends toward higher density stand conditions, especially in the understory, than what was historically present in the area. Habitat conditions would remain generally unchanged at the Critical Habitat Unit scale in the short term unless a major disturbance such as fire, wind, ice, insects, or disease occurred.

At longer time scales, the growth of late-successional forest habitat or of young stands toward late-successional forest habitat under this alternative is uncertain. Second-growth stands with high tree densities and single canopy layering may not develop the large crowns and diameters and vertical and horizontal layering and spacing created by fire (Andrews et al., 2005). Fire hazard would continue to increase and be the highest threat to habitat loss in forest stands where the density of hardwood and conifer stems and fuel ladders is high.

3.7.2.5 Alternative 2 (Proposed Action) - Direct and Indirect Effects on Northern Spotted Owl Critical Habitat

Under Alternative 2, a mixture of activities is proposed to occur within the Revised 2012 Critical Habitat for the NSO. All of these activities would occur within the KLE 3 Subunit of the Klamath East Habitat Unit. Table 18 below describes the sub-set of the proposed treatments that would occur within the Revised 2012 Critical Habitat and what NSO habitat type they would occur.

Table 18: Acres of Proposed Treatment in Revised 2012 Critical Habitat for Northern Spotted Owl

Treatment Type	NRF	Dispersal	Unsuitable	Total
Variable Density Thinning	114	183	0	**297**
Density Management / Hazardous Fuels Reduction	61	232	55	**348**
Hazardous Fuels Reduction	415	305	167	**887**
Grand Total	**590**	**720**	**222**	**1,532**

Approximately 114 acres of Variable Density Thinning (VDT) is proposed to occur within NRF habitat located within 2012 CH. Of these 114 acres of VDT in NRF habitat, 48 acres are anticipated to result in a NRF downgrade. All other treatments proposed to occur within the 2012 CH are specifically designed to treat and maintain the existing habitat condition where the treatments occur, and would not alter the amount of habitat available within the Klamath East CHU, nor adversely modify any of the Primary Constituent Elements within these treated areas.

The 48 acres of NRF downgrade is spread among three treatment units: 9-16, 21-10 and 21-11. These stands are relatively homogeneous in terms of species composition and stand structure. These stands are reaching high stocking levels that form a dense overstory with many trees having poorly developed crowns (stem-exclusion phase).

The proposed VDT prescription would thin treated forest stands to a wider spacing, leaving the most vigorous individuals of the stand remaining. The VDT approach would employ a system of skips and gaps (described in more detail in Section 2.2.1) that would work to increase the structural variation across the treatment area. Both the general thinning and the skips and gaps would work to improve habitat quality in the long term

(30-50 years) by increasing growth rates of the remaining trees (Miller and Emmingham, 2001; Roberts and Harrington 2008) and creating variable habitat conditions across the stand including pockets of high density and small openings that provide improved access to prey species (Harrington et al., 2005).

The downgrading of 48 acres of NRF habitat within CH would likely result in some adverse impacts to this NRF habitat by decreasing flying squirrel abundance by removing mid-story and overstory structure from those acres (Wilson 2010, Manning et al., 2011), which could reduce spotted owl foraging opportunities for 30-50 years. Also, reducing canopy cover below 60 percent would likely introduce ecological edge effects to the affected stands as well as to adjacent stands of NRF habitat, extending the area of impact beyond the treated areas. However, even with these anticipated adverse effects across 48 acres of NRF habitat within CH, the proposed actions would negligibly affect the intended conservation function of the KLE 3 Subunit of the Klamath East Habitat Unit because the Proposed Action would only result in a reduction of 0.12% of the available NRF habitat within sub-unit KLE3 (USDI BLM 2013). In total, all treatments proposed within the KLE 3 Subunit of the Klamath East Habitat Unit would impact 1.4% of the KLE 3 Subunit.

Even though some adverse impacts are anticipated where NRF habitat is downgraded, the Proposed Action is expected to result in long term (30-50 years) beneficial effects to NSOs and the Revised 2012 Critical Habitat because the VDT would accelerate the development of the relatively homogeneous stands toward late-successional habitat faster than if the stands were left untreated (Hayes et al., 1997). The activities proposed as part of Alternative 2, especially the Hazardous Fuels Reduction treatments, would help reduce the likelihood of high severity fire occurring within the 2012 Critical Habitat. The Fire Hazard Section (3.2) provides a detailed explanation and analysis on this topic. Specific to NSOs, this approach is supported by complex modeling procedures that indicated that active management of sites with high fire hazard was more favorable to spotted owl conservation over the long term (75 years) than no management (Roloff et al., 2012).

A great deal of planning and forethought was used during the development of Alternative 2 in terms of the spatial location and magnitude of the proposed treatments in relation to known NSO sites and current habitat conditions across the landscape. The proposed suite of management activities included under Alternative 2 are designed to be consistent with both the *Revised Recovery Plan for the Northern Spotted Owl* (USFWS 2011) and the 2012 Final Revised Critical Habitat for the NSO (USFWS 2012) management recommendations of active management using ecological forestry techniques, both inside and outside of reserves.

3.7.2.6 Alternative 2 (Proposed Action) - Cumulative Effects on Northern Spotted Owl and its Critical Habitat

Cumulative effects are environmental changes that are affected by more than one land-use activity, and can include beneficial changes. Cumulative effects for wildlife species and habitat are reviewed at the watershed level to capture the varying habitats, species home ranges, and varying degrees of species mobility. Technical issues that complicate analysis of cumulative effects include the large spatial and temporal scales involved, the

wide variety of processes and interactions that influence cumulative effects, and the lengthy lag-times that often separate a land-use activity and the landscape's response to that activity.

Fire suppression, road building, and timber harvest throughout the Planning Area have resulted in habitat modification and fragmentation, and have changed the distribution and abundance of wildlife species surrounding the Planning Area. Timber harvest has occurred on BLM lands in the Jumpoff Joe Creek Watershed since 1950. The associated habitat loss has negatively affected late-successional forest habitat dependent species by reducing stand seral stage and changing habitat structure. However, species associated with younger forested conditions have benefited from these changes due to the increased acres of young stands.

Private lands surrounding the Activity Area are made up of early-, mid-, and late-seral forests, agriculture, urban areas, and barren land. Most private forest lands are managed for production of wood fiber on a forest rotation basis. It is anticipated that any remaining late-seral forests on private timber lands would be converted to early seral forest over the next one or two decades.

For those species dependent on early seral habitat, private forest lands do not always provide quality habitat as competing vegetation that includes flowering plants, shrubs and hardwood trees are regularly sprayed to reduce competition with future harvestable trees.

Non-Federal lands are not expected to provide demographic support for spotted owls across and between physiographic provinces (Thomas et al., 1990; USDA and USDI 1994). The Medford BLM assumes these past management practices would continue and reduce the amount of NRF habitat for spotted owl on non-Federal lands over time. The amount of private land harvest at the watershed level would not preclude spotted owls or other late-successional forest species from dispersing within or through the Jumping Bean Planning Area or the Jumpoff Joe 5th field watershed.

There are two foreseeable federal projects in the Jumping Bean Ecological Forestry Project Planning cumulative effects analysis area: the Shorthorn Gulch Land Parcel Sale and 308 acres of non-commercial treatments under the 2012 Silviculture Practices-Reforestation, Young Stand Management, and Forest Condition Restoration Treatments (FY12-FY17).

The Shorthorn Gulch Land Parcel Sale is proposed within the Jumping Bean Ecological Forestry Project in T34S-R5W-Section 30. This potential land sale of 0.66 acres to resolve an inadvertent trespass is adjacent to Jumping Bean’s Unit 30-4. If this land is sold, it would no longer be within the jurisdiction of BLM’s management. This portion of land is comprised of serpentine associated vegetation (shrubs and grass) and is does not provide any habitat value for spotted owls. The sale of this small parcel of land would have no effect on spotted owls as the land does does provide any habitat value for this species.
The potential 308 acres of silvicultural treatments include 213 acres of pre-commercial thinning and 95 acres of pruning. These treatments are planned to occur in areas outside of the Jumping Bean Ecological Forestry Project Activity Area, but within the same

Planning Area. These planned silvicultrual treatments would occur in young plantations that are not currently considered spotted owl habitat. Therefore, there are no direct effects to spotted owls from these activities. These treatments are expected to increase growth rates of the unthinned young trees in these plantations, which would accelerate the growth of these trees towards habitat conditions that would be suitable for owls in the future.

Considering that the two projects identified above would have no direct effects to spotted owls habitat in the Jumping Bean Planning Area or the Jumpoff Joe 5th field watershed, there are no cumulative impacts to consider in addition to the Proposed Action. Additionally, with the small level of harvest, this project would not preclude owls from occupying viable territories and continuing to reproduce in the Planning Area.

Chapter 4.0 - List of Preparers

Table 19: List of Preparers

Interdisciplinary Preparers	Title	Resource Values
Michelle Calvert	Environmental Coordinator	NEPA, Project Co-lead
Ken Grigsby	Editor	NEPA, Review and Editing
Yanu Gallimore	Project Lead Fuels Specialist	Fire and Fuels
Colleen Dulin	Hydrologist	Soil and Water
Rachel Showalter	Botanist	Plants/Noxious Weeds
Ryan Snider	GIS Specialist	Geographical Information Systems (GIS)
Sean Gordon	Forester	Prescription Writer, Project Co-lead
Merry Haydon	Cultural Specialist	Cultural Resources
Bob Murray	Forester	Harvest Systems
Jon Raybourn	Fisheries Biologist	Fisheries
Erica Freeman	Engineer	Roads and Engineering
Jason Reilly	Wildlife Biologist	Wildlife
Barbara Zurhellen	Recreation Planner	Recreation and Visual Resources

Chapter 5.0 - Public Involvement and Consultation

5.1 Public Scoping and Notification

Initial contact was made with individuals, groups or agencies that have expressed interest in forest management and other types of projects through quarterly mailings of the *Medford Messenger* publication. A brief description of proposed projects, such as the Jumping Bean Ecological Forestry Project, a legal location and general vicinity map are provided along with a comment sheet for public responses. The Jumping Bean Ecological Forestry Project was included in these quarterly publications beginning in the winter of 2011/2012.

Public scoping included two scoping letters for the Jumping Bean Ecological Forestry Project (February and August 2012) and a public field trip (October 2012). The February 2012 scoping letter was released prior to the project being assigned as an Ecological Forestry Project.

The BLM also had two field trips with Drs. Johnson and Franklin in April and September 2012 to review sample marking and to ensure the project would meet the principles of their ecological forestry work.

All substantive scoping comments were responded to in Appendix 2 of the Jumping Bean Ecological Forestry Project EA (DOI-BLM-M070-2012-003-EA). Scoping comments were considered in the development of the project.

5.2 30-Day Public Comment Period

The Jumping Bean Ecological Forestry Project Environmental Assessment (DOI-BLM-M070-2012-003-EA) will be made available for a 30-day public comment period. Notification of the comment period will include: publication of a legal notice in the Daily Courier, newspaper of Grants Pass, Oregon; and a letter will be mailed to those individuals, organizations, and agencies that have requested to be involved in the environmental planning and decision making processes for activities addressed in this EA.

5.3 Consultation

5.3.1 United States Fish and Wildlife Service

Northern Spotted Owl

The BLM completed a Biological Assessment in conjunction with the U.S. Fish and Wildlife Service (BLM 2013) to assess the impacts from the proposed Jumping Bean Ecological Forestry Project to spotted owls in compliance of Section 7 of the Endangered Species Act. A Biological Opinion (BO) was received April 12th, 2013 (#01EOFW00-2013-F-0091).

The Jumping Bean Ecological Forestry Project Planning Area overlaps a portion of the Revised 2012 Critical Habitat (USFWS 2012) for the northern spotted owl, specifically a portion of the KLE 3 Subunit of the Klamath East Habitat Unit.

5.3.2 National Oceanic and Atmospheric Administration (NOAA)

The Proposed Action located within the Rogue River Basin and the range of the federally threatened Southern Oregon/Northern California Coasts coho salmon, would have no effect on coho or critical habitat.

Consultation for the Endangered Species Act with NOAA is not required as the Proposed Action would not affect listed species or their habitat. No consultation is needed under the Magnuson-Stevens Fishery Conservation and Management Act as there is no adverse effect to Essential Fish Habitat for coho and Chinook within the Rogue River Basin.

5.3.3 State Historical Preservation Office

Archaeological field surveys in the Activity Area were conducted in accordance with the working Protocol with the State Historic Preservation Office (SHPO) for the Management of Cultural Resources on Lands administered by the Bureau of Land Management (BLM) and the National Historic Preservation Act of 1966 (Section 106 as amended in 2001 and 2006). Consultation with SHPO is in progress and will be completed prior to making a decision on the Jumping Bean Ecological Forestry Project.

5.3.4 Native American Tribal Consultation

Jumping Bean Ecological Forestry Project Scoping Reports (February and August 2012) were sent to local federally recognized Native American Tribes interested in Medford District Bureau of Land Management proposed projects. The Tribes take an active role in the management of their native lands and the BLM works with individual tribal governments to further identify and address Native American concerns and traditional uses of lands administered by the BLM. Further consultation with Tribes in the form of meeting, phone calls, and emails did not identify any cultural resource tribal concerns associated with the Jumping Bean Ecological Forestry Project.

APPENDIX 1 - ENVIRONMENTAL ELEMENTS

Jumping Bean Ecological Forestry Project Environmental Assessment

(DOI-BLM-M070-2012-003-EA)

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

Table 20: Environmental Elements

Supplemental Authorities to be Considered (BLM Handbook 1790-1 Appendix 1, Executive Orders, and public comments). This table lists some of the other authorities that may apply if the Proposed Action (Alternative 2) described in the Environmental Assessment was implemented.		
Critical Element of the Human Environment	**Status** **1/ Not Present** **2/ Not Affected** **3/ Affected**	**Interdisciplinary Team Remarks** **1/ If not affected, why?** **2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in the 1995 RMP to reduce or avoid environmental harm**
Air Quality (Clean Air Act)	Not Affected	Prescribed burning would be administered in accordance with the Oregon Smoke Management Plan administered by the Oregon Department of Forestry and the regulations established by the Oregon Department of Environmental Quality. The Planning Area is not located within a Class I designated airshed or non-attainment area. The impact of smoke on air quality is expected to be localized and of short duration. Particulate matter would not be of a magnitude to harm human health, affect the environment, or result in property damage. Dust created from vehicle traffic on gravel or natural-surfaced roads, road work, and logging operations would be localized and of short duration. As such, the Proposed Action would be consistent with the provisions of the Federal Clean Air Act. *See the Air Quality Specialist Report in Appendix 10 for further discussion of the affected environment and environmental effects of the alternatives related to this element of the environment.*
Areas of Critical Environmental Concern (ACEC) and Research Natural Area (RNA)	Not Present	There are no Areas of Critical Environmental Concern (ACECs) or Research Natural Areas (RNAs) in this project's Planning Area, as designated under the Medford District RMP.
Cultural, Historic, Paleontological	Not Affected	Cultural surveys were completed for in the Activity Area of the Jumping Bean Ecological Forestry Project in accordance with the National Cultural Programmatic Agreement and the Protocol for Managing Cultural Resources on Lands Administered by the BLM in Oregon. A total of 18 sites have been identified within the Activity Area or other areas identified as Areas of Potential Effect (APEs). Most of the sites relate to past mining activities, when placer and lode mining were more prevalent than today.

Supplemental Authorities to be Considered (BLM Handbook 1790-1 Appendix 1, Executive Orders, and public comments). This table lists some of the other authorities that may apply if the Proposed Action (Alternative 2) described in the Environmental Assessment was implemented.		
Critical Element of the Human Environment	**Status** **1/ Not Present** **2/ Not Affected** **3/ Affected**	**Interdisciplinary Team Remarks** **1/ If not affected, why?** **2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in the 1995 RMP to reduce or avoid environmental harm**
Cultural, Historic, Paleontological (continued)	Not Affected	Cultural sites would be protected using Project Design Features (PDFs) or evaluation and mitigation procedures would be implemented based on recommendations from the Resource Area Archaeologist with input from Tribes and concurrence from the Field Manager and State Historic Preservation Office. Protection of cultural sites includes all those listed below. According to the archaeological record, prehistoric occupation of southwestern Oregon dates back to at least 10,000 years ago. Human occupation in the Planning Area included territories of several different modern-day ethnographic groups. These groups include the Cow Creek Band of Umpqua Tribe of Indians, the Confederated Tribes of the Grand Ronde Community of Oregon, and the Confederated Tribes of Siletz Indians. The Native Americans shared similar cultures and lifestyles but had different languages. Settlement and subsistence patterns centered around small permanent villages typically located on the terraces of major waterways. Visits to the high country were made for a variety of food resources and for spiritual practices such as vision quests. Ethnographic accounts describe the native inhabitants using fire to propagate and manage various resources including nut, seed, root, and berry crops, for hunting and wildlife, and basketry materials (Pullen 1996). The area was sparsely settled until 1851 when gold was almost simultaneously discovered in Josephine and Jackson Counties. The resultant gold rush brought quick settlement and establishment of the first towns in the region. Within 10 years the Siskiyou and Applegate Trails were established as major trade and travel routes connecting Fort Vancouver on the Columbia River and the Willamette Valley to the Sacramento Valley of California (Ennis 2012:16). The Interstate highway marks the general location of this major travel route used in the 1800s. While the date of the first gold discovery in the Planning Area is unknown, Jumpoff Joe and Louse Creek were placer mined as early as the 1860s. Placer mining also occurred on Jack Creek and Horse Creek. The Sexton placer mine, near the headwaters of Jumpoff Joe Creek, was active during the 1930s. (BLM 1998c:82). According to historic records, the first major lode mining operation occurred in the Planning Area when the Lucky Queen began operations along Jumpoff Joe Creek in the mid-1870s (Ennis 2012:18). The Daisy-Hammersly Mine, located between Horse Creek and Jumpoff Joe Creek, has been in operation on and off since at least 1890 and was one of the largest lode mines in the area. In 1938 the mine expanded production and increased output to over $200,000. The Granite Hill Mine and the Ida

Supplemental Authorities to be Considered (BLM Handbook 1790-1 Appendix 1, Executive Orders, and public comments). This table lists some of the other authorities that may apply if the Proposed Action (Alternative 2) described in the Environmental Assessment was implemented.		
Critical Element of the Human Environment	**Status** **1/ Not Present** **2/ Not Affected** **3/ Affected**	**Interdisciplinary Team Remarks** **1/ If not affected, why?** **2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in the 1995 RMP to reduce or avoid environmental harm**
Cultural, Historic, Paleontological (continued)	Not Affected	Mine were other lode mines that were in operation until around World War II. (BLM 1998c: 81). By 1916, a telephone line and power line connected the mining communities within the Jumpoff Joe and Louse Creek drainages. The communication and power system included a line to the fire lookout built on top of Sexton Mountain. General Land Office survey notes describe the line existing along Morris Creek, Louse Creek, and Horse Creek. **Paleontological Resources** Most fossils found in southwestern Oregon are from the Hornbrook Formation that expands from Yreka, California, through the Cottonwood and Bear Creek valleys, to Grave Creek (Peck 1956, Orr and Orr 1992:51-78). If cultural resources or vertebrate fossils are found during project implementation, the project would be redesigned to protect the resource values present, or evaluation or mitigation procedures would be implemented based on recommendations from the Resource Area Archaeologist with concurrence from the Field Manager and appropriate regulatory agencies.
Energy (Executive Order 13212)	Not Affected	The Proposed Action would have no effect on energy development, production, supply and/or distribution.
Environmental Justice (Executive Order 12898)	Not Affected	The Proposed Action is not anticipated to have a disproportionately high and adverse human health or environmental effects on minority populations and low-income populations.
Prime or Unique Farm Lands	Not Present	There are no prime or unique farmlands in the Planning Area.
Flood Plains (Executive Order 11988)	Not Affected	The Proposed Action does not involve occupancy and modification of floodplains, and would not increase the risk of flood loss. As such, the Proposed Action would be consistent with Executive Order 11988.
Hazardous or Solid Wastes	Not Affected	There would be no environmental effects associated with this element due to the implementation of the Best Management Practices contained in the Medford RMP and the terms/conditions of the timber sale contract.

Supplemental Authorities to be Considered (BLM Handbook 1790-1 Appendix 1, Executive Orders, and public comments). This table lists some of the other authorities that may apply if the Proposed Action (Alternative 2) described in the Environmental Assessment was implemented.		
Critical Element of the Human Environment	**Status** **1/ Not Present** **2/ Not Affected** **3/ Affected**	**Interdisciplinary Team Remarks** **1/ If not affected, why?** **2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in the 1995 RMP to reduce or avoid environmental harm**
Invasive, Nonnative Species (Executive Order 13112)	Not Affected	Units with the Jumping Bean Ecological Forestry Activity Area were surveyed for noxious weeds in the spring of 2010 and 2011. Several sites were pulled upon discovery, and remaining sites found along roadsides were treated in 2010 and 2011. Sites documented include five populations of *Rubus armenicus* (Blackberry) and 5 populations of *Cytisus scoparius* (Scotch broom). Based on these population sizes, per noxious weed reports provided by professional botany contractors, the Grants Pass botanist estimated that approximately 0.01% of the harvest units / fuels reduction units / temp route construction acreage harbor noxious weeds. The maximum square footage/acreage occupied by all noxious weed species reported in or directly adjacent to Jumping Bean Ecological Forestry Project units is approximately 0.41 acres. The Medford District RMP states that the objectives for noxious weeds are to "contain and/or reduce noxious weed infestations on BLM-administered land. (p. 92)," and "survey BLM-administered land for noxious weed infestations…(p. 93)." These RMP directions for weed management are intended to be met at a landscape level. Several sites were pulled upon discovery, and in an effort to continue to contain and/or reduce noxious weeds on federal land, the BLM has remaining sites found along roadsides planned for treatment in 2013. Subsequent follow-up treatments are planned to occur in the spring of 2014. There are three main reasons why potential weed establishment is not expected to result in a detectable effect to overall ecosystem health. First, surveys indicate that a very small percentage, less than 1% of acreage within the activity units, is affected by noxious weeds. Second, these sites located in units proposed for treatment have been reported during pre-disturbance surveys, and have received weed treatment under Medford District's *Integrated Weed Management Plan and Environmental Assessment* (BLM, 1998c). Third, Project Design Features (PDFs) have been established to minimize the rate at which project activities might potentially spread noxious weed seed from outside/adjacent sources. Seeds are spread by wind, animal/avian vectors, natural events, and by human activities - in particular through soil attachment to vehicles. BLM's influence over these causes of the spread of noxious weeds is limited to those caused by human activities. Additional human disturbance and traffic would increase the potential for spreading noxious weed establishment, but regardless of human activity, spread of these weeds would continue through natural forces. Thus, the BLM cannot stop the spread of noxious weeds, it may only reduce the risk or rate of spread. *See Noxious Weed Specialist Report in Appendix 5.*

Supplemental Authorities to be Considered (BLM Handbook 1790-1 Appendix 1, Executive Orders, and public comments). This table lists some of the other authorities that may apply if the Proposed Action (Alternative 2) described in the Environmental Assessment was implemented.		
Critical Element of the Human Environment	**Status** **1/ Not Present** **2/ Not Affected** **3/ Affected**	**Interdisciplinary Team Remarks** **1/ If not affected, why?** **2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in the 1995 RMP to reduce or avoid environmental harm**
Native American Religious Concerns	Not Affected	Native American groups were contacted and no concerns were identified by these groups.
T/E (Threatened or Endangered) Fish Species or Habitat	Not Affected (Southern Oregon/ Northern California Coasts coho salmon Evolutionarily Significant Unit (ESU))	Salmon are listed under the Endangered Species Act by evolutionarily significant units (ESU). An ESU is a stock of Pacific salmon that is 1) substantially reproductively isolated from other specific populations units; and 2) represents an important component in the evolutionary legacy of the species. **SONCC Coho Salmon** are in the Jumpoff Joe Creek, Grave Creek, and Grants Pass-Rogue River fifth-field watersheds. Harvesting, yarding, landing construction and rehabilitation, temporary route construction and reconstruction (including route decommissioning), road maintenance hauling, and fuel treatments would have no effect on SONCC coho salmon (ESA-Threatened) and coho critical habitat (CCH). There is one haul road segment where a BLM-maintained road would cross over two coho-bearing streams; both are via bridges (BLM Road 35-5-21). Sediment would not be expected to enter CCH as a result of haul or maintenance of haul roads, with dry condition haul, well-vegetated ditch lines, properly functioning cross drains, and existing filter strips, or sediment barriers installed, where needed, to prevent sediment delivery into CCH. Project activities would follow all provisions of the Clean Water Act (40 CFR Subchapter D) and Department of Environmental Quality's (DEQ's) provisions for maintenance of water quality standards.
T/E (Threatened or Endangered) Plant Species or Habitat	Not Present (T/E plants)	Of the four federally listed plants on the Medford District (*Fritillaria gentneri, Limnanthes flocossa* ssp. *grandiflora, Arabis macdonaldiana,* and *Lomatium cookii),* only *Limnanthes flocossa ssp. grandiflora* does not have a range which extends into the Grants Pass Resource Area. Final units within the Jumping Bean Ecological Forestry Activity Area do not fall within the range of *Lomatium cookii* or *Arabis macdonaldiana*, but are within the range of *F. gentneri*, as determined by the 2004 U.S. Fish and Wildlife Service Biological Opinion. Final units were surveyed according to the Service's 2-year protocol; vascular plant surveys were conducted in the springs of 2010, 2011, and 2013 and 1new *Fritillaria gentneri* population was found. There would be no anticipated effect from the Proposed Action on any federally listed plant.

Supplemental Authorities to be Considered (BLM Handbook 1790-1 Appendix 1, Executive Orders, and public comments). This table lists some of the other authorities that may apply if the Proposed Action (Alternative 2) described in the Environmental Assessment was implemented.		
Critical Element of the Human Environment	**Status** **1/ Not Present** **2/ Not Affected** **3/ Affected**	**Interdisciplinary Team Remarks** **1/ If not affected, why?** **2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in the 1995 RMP to reduce or avoid environmental harm**
T/E (Threatened or Endangered) Wildlife Species, Habitat and/or Designated Critical Habitat	Affected (spotted owl habitat)	Alternative 2 would downgrade 147 acres of nesting, roosting, and foraging (NRF habitat), 624 acres of NRF would be treated and maintained, and 1,200 acres of dispersal habitat would be treated and maintained. No treatments would occur in Structurally Complex Habitat (Recovery Action 32) habitat. Temporary route re-construction would not affect spotted owls because these areas are already disturbed areas and do not function as suitable spotted owl habitat. *Refer to Section 3.7 of the EA for a discussion of the affected environment and environmental effects of the alternatives related to this element of the environment.*
	Affected (2012 revised NSO critical habitat)	In 2012 critical habitat, Alternative 2 would downgrade 48 acres of nesting, roosting, and foraging (NRF habitat) and 542 acres of NRF would be treated and maintained, and 720 acres of dispersal habitat would be treated and maintained. *Refer to Section 3.7 of the EA for a discussion of the affected environment and environmental effects of the alternatives related to this element of the environment.*
	Not Affected Disturbance-NSO	Proposed activities occurring during spotted owl nesting season are not expected to disturb owls because all proper Project Design Criteria distance buffers and timing restrictions during the nesting and fledging periods would be applied to proposed activities. *Refer to Section 2.3.2.6 of the EA (PDFs) for seasonal restriction details.*
	Not Present (Marbled Murrelet habitat, Critical Habitat, disturbance)	Marbled murrelets are not known to occur in the Planning Area. The area is outside of the range of the Marbled Murrelet. There is no Marbled Murrelet Critical Habitat in the Planning Area.
Water Quality (Surface and Ground)	Not Affected (Temperature)	**Temperature:** In this Planning Area, there are a total of 27.1 miles in Jumpoff Joe Creek and Louse Creek do not meet ODEQ water quality standards for temperature. BLM lands would continue to be managed to attain compliance with state water quality standards and the NWFP ACS objectives. Streams in this Planning Area are generally well shaded on public lands by both the mid and upper canopy streamside vegetation. Within this Planning Area, the Ecological Protection Zone (EPZ) and Riparian Thinning would maintain stream temperatures by reserving all trees within the primary shade zone (USFS and BLM, 2005) and a majority of the trees within the secondary shade zone (USFS and BLM, 2005) from commercial harvest.

Supplemental Authorities to be Considered (BLM Handbook 1790-1 Appendix 1, Executive Orders, and public comments). This table lists some of the other authorities that may apply if the Proposed Action (Alternative 2) described in the Environmental Assessment was implemented.		
Critical Element of the Human Environment	**Status** **1/ Not Present** **2/ Not Affected** **3/ Affected**	**Interdisciplinary Team Remarks** **1/ If not affected, why?** **2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in the 1995 RMP to reduce or avoid environmental harm**
Water Quality (Surface and Ground) (continued)	Not Affected (Chemical/Nutrient Contamination)	**Chemical/Nutrient Contamination:** Jumpoff Joe Creek, Louse Creek, and Jones Creek are listed for one of more of the following chemical or nutrient contaminations; alkalinity, ammonia, chloride, dissolved oxygen, pH, and phosphate phosphorus. This project would not alter any chemical or nutrient contaminates within these streams. No herbicides or pesticides would be used as a part of this project. Hydraulic fluid and fuel lines on heavy mechanized equipment would be in proper working condition in order to minimize potential for leakage into streams. Due to Project Design Features such as no re-fueling of any equipment would occur within 150 ft of streams or stream crossings, it would not be expected for the proposed activities to have any effect on the chemical contamination of streams or waterbodies. Fuel treatments could increase nitrogen levels within the stream and riparian zone in the short term. These would be highly localized, low level increases and would not be of a magnitude that would have any adverse effect on macroinvertebrate populations which are the most sensitive indicators of water quality conditions.
	Not Affected Sediment/Turbidity (harvest treatments yarding, landing construction, temporary route construction and reconstruction (including associated decommissioning), and fuels and understory thinning treatments	**Sediment/Turbidity:** Where roads are hydrologically connected, a small amount of localized sediment may enter streams during hauling and road maintenance. These actions would result in measurable increases in sediment for no more than 25 ft downstream of the impact point. One existing road would be re-constructed, used, and then decommissioned. Actions associated with this road could result in measurable increases in sediment for no more than 50-100 ft downstream of the impact point, and would result in an overall improvement to stream function and water quality in the long-term. Sediment from hauling, road maintenance, road reconstruction, or decommissioning actions would not be of a magnitude that would alter macroinvertebrate populations, and would be within the State of Oregon water quality standards. Due to the implementation of additional protection measures on roads within close proximity to streams with T&E fish species, no sediment would be expected to enter coho salmon habitat as a result of haul or road maintenance.
	Affected Sediment/Turbidity (hauling and road maintenance)	All timber harvest treatments, yarding, landing construction and rehabilitation, temporary route construction and reconstruction (including associated decommissioning), and fuels and understory thinning treatments would not result in measurable inputs of sediment to streams due to project design. Riparian buffers would be utilized to prevent the transport of activity generated sediment from entering streams. *See Section 3.6: Water Quality: Stream Sedimentation for a discussion of the affected environment and environmental effects of the alternatives related to this element of the environment.*

Supplemental Authorities to be Considered (BLM Handbook 1790-1 Appendix 1, Executive Orders, and public comments). This table lists some of the other authorities that may apply if the Proposed Action (Alternative 2) described in the Environmental Assessment was implemented.		
Critical Element of the Human Environment	**Status** **1/ Not Present** **2/ Not Affected** **3/ Affected**	**Interdisciplinary Team Remarks** **1/ If not affected, why?** **2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in the 1995 RMP to reduce or avoid environmental harm**
Wetlands (Executive Order 11990)	Not Affected	The Proposed Action would not result in the destruction, loss or degradation of any wetland. As such, the Proposed Action would be consistent with Executive Order 11990.
Wild and Scenic Rivers	Not Present	There are no eligible river segment under the Wild and Scenic Rivers Act of 1968, as amended in the Jumping Bean Ecological Forestry Project Planning Area.
Wilderness	Not Present	
Essential Fish Habitat (Magnuson-Stevens Fisheries Conservation and Management Act)	Not Affected (EFH within the Jumpoff Joe Creek, Grave Creek, and Grants Pass-Rogue River HUC 5 Watersheds)	Essential Fish Habitat (EFH) is within the Jumpoff Joe Creek, Grave Creek, and Grants Pass-Rogue River HUC 5 watersheds. Harvesting, yarding, landing construction and rehabilitation, temporary route construction and reconstruction (including route decommissioning), road maintenance, hauling, and fuel treatments would have no effect on EFH. There is one haul road segment where a BLM-maintained road would cross over two EFH streams; both are via bridges (BLM Road 35-5-21). Sediment would not be expected to enter EFH as a result of haul or maintenance of haul roads, with dry condition haul, well-vegetated ditch lines, properly functioning cross drains, and existing filter strips, or sediment barriers installed, where needed, to prevent sediment delivery into EFH. Project activities would follow all provisions of the Clean Water Act (40 CFR Subchapter D) and Department of Environmental Quality's (DEQ's) provisions for maintenance of water quality standards.
Fire Hazard	Affected	Fire hazard within the Jumping Bean Ecological Forestry Project Planning Area would be reduced in Variable Density Thinning, Density Management, and Hazardous Fuel Reduction units. Landing, machine, and hand piles may present a short term increase in fire hazard because they have the potential to produce flame lengths that exceed the fire behavior threshold to the extent of increased spotting distance, until the piles are treated in 1-2 years. *Refer to Section* 3.2 *of the EA for a discussion of the affected environment and environmental effects of the alternatives related to this element of the environment.*
Fire Risk	Not Affected	Fire risk is the probability of a fire starting, as determined by the presence of ignition sources such as lightning and human activities. New permanent road construction would have the potential to increase fire risk because new roads allow for an increase in human presence by providing easier access into previously inaccessible areas. However, there is no new permanent road construction proposed in the Jumping Bean Ecological Forestry IVM Project and the 1.5 miles temporary route construction and re-construction would be decommissioned after use.

Supplemental Authorities to be Considered (BLM Handbook 1790-1 Appendix 1, Executive Orders, and public comments). This table lists some of the other authorities that may apply if the Proposed Action (Alternative 2) described in the Environmental Assessment was implemented.		
Critical Element of the Human Environment	**Status** **1/ Not Present** **2/ Not Affected** **3/ Affected**	**Interdisciplinary Team Remarks** **1/ If not affected, why?** **2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in the 1995 RMP to reduce or avoid environmental harm**
Recreation	Not Affected	Recreation activities in the Planning Area included driving for pleasure, hiking, camping, hunting, fishing, rafting, off-highway vehicle use, horseback riding, and bicycling. The 1995 RMP designated Hellgate to Galice Scenic Byway and proposed Cow Creek to West Fork Evans Creek Scenic Byway are a proposed haul route for this project. While there might be increased logging truck traffic during the operational months, this type of activity is typical for the area because of harvesting on private and other federally-managed lands. Under the 1995 RMP, there are developed BLM recreation sites on public lands in the Project Planning Area. The public also uses existing BLM roads, and trails and user created trails on BLM lands throughout the Jumping Bean Ecological Forestry Project Planning Area.
Rural Interface Areas (1995 RMP, Map 13)	Not Affected	Rural residents residing in the Project Planning Area would experience minimal short-term noise, dust, and traffic congestion due to logging operations. These types of activities are common because of management practices occurring on private and other public lands. There are Rural Interface Areas within or immediately adjacent to proposed project units, however they would be minimally affected. Water or approved surface stabilizers/dust palliatives would be applied to natural surface roads as needed for dust abatement (see Section 2.3.2.2).
Special Areas (not including ACEC)	Not Present	

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Special Status Species (SSS) (not including T/E): Fish Species/Habitat	Not Affected (Klamath Mountains Province steelhead and Southern Oregon Coast/Northern California Coast Chinook within the Jumpoff Joe Creek, Grave Creek, and Grants Pass-Rogue River HUC 5 Watersheds)	Klamath Mountains Province steelhead and Southern Oregon Coast/Northern California Coast Chinook are within the Jumpoff Joe, Grave Creek, and Grants Pass-Rogue River HUC 5 watersheds. Their habitat is contained within the Critical Habitat analyzed for SONCC coho salmon. Harvesting, yarding, landing construction and rehabilitation, temporary route construction and reconstruction (including route decommissioning), road maintenance hauling, and fuel treatments would have no effect on Klamath Mountains Province steelhead and Southern Oregon Coast/Northern California Coast Chinook. There is one haul road segment where a BLM-maintained road would cross over two streams with SSS; both are via bridges (BLM Road 35-5-21). Sediment would not be expected to enter SSS habitat as a result of haul or maintenance of haul roads, with dry condition haul, well-vegetated ditch lines, properly functioning cross drains, and existing filter strips, or sediment barriers installed, where needed, to prevent sediment delivery into SSS streams. Project activities would follow all provisions of the Clean Water Act (40 CFR Subchapter D) and Department of Environmental Quality's (DEQ's) provisions for maintenance of water quality standards. Fish species are listed as special status species by ESUs. See the "T/E (Threatened or Endangered) Fish Species or Habitat" section above for the definition of ESUs.
Special Status Species, and Survey and Manage (not including T/E): Plant Species/Habitat	Not Affected	**Bureau Special Status, and Survey and Manage Plants** On July 26, 2007 a new Special Status Species list went into effect (IM No. OR-2007-072), coupled with a new Interagency Special Status Species Policy (ISSSP). This new list has two categories, (ISSSP) Sensitive and Strategic. The former categories of Bureau Assessment and Bureau Tracking no longer exist. Sensitive species require a pre-project clearance and management to prevent them from trending toward federal listing. There is no pre-project clearance or management required for the Strategic Species at the BLM District level, thus Strategic Species will not be analyzed in this document.

Supplemental Authorities to be Considered (BLM Handbook 1790-1 Appendix 1, Executive Orders, and public comments). This table lists some of the other authorities that may apply if the Proposed Action (Alternative 2) described in the Environmental Assessment was implemented.		
Critical Element of the Human Environment	**Status** **1/ Not Present** **2/ Not Affected** **3/ Affected**	**Interdisciplinary Team Remarks** **1/ If not affected, why?** **2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in the 1995 RMP to reduce or avoid environmental harm**
Special Status Species, and Survey and Manage (not including T/E): Plant Species/Habitat (continued)	Not Affected	In addition to the aforementioned Special Status Species policy, Survey and Manage requirements have been re-instated as of December 2009. On December 17, 2009, the U.S. District Court for the Western District of Washington issued an order in *Conservation Northwest, et al. v. Sherman, et al.*, No. 08-1067-JCC (W.D. Wash.), granting Plaintiffs' motion for partial summary judgment and finding NEPA violations in the *Final Supplemental to the 2004 Supplemental Environmental Impact Statement to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines* (USDA and USDI, June 2007). In response, parties entered into settlement negotiations in April 2010, and the Court filed approval of the resulting Settlement Agreement on July 6, 2011. Projects that are within the range of the northern spotted owl are subject to the survey and management standards and guidelines in the 2001 ROD, as modified by the 2011 Settlement Agreement. The Jumping Bean Ecological Forestry Project is consistent with the Medford District Resource Management Plan/Forest Land and Resource Management Plan as amended by the 2001 *Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines* (2001 ROD), as modified by the 2011 Settlement Agreement. **<u>Survey Results</u>** Approximately half of the proposed units were surveyed for vascular and nonvascular plant surveys in the spring of 2011 and 2012. Second-year surveys for *Fritillaria gentneri* were conducted [in the spring of 2011 and 2012. The remaining proposed units were surveyed in the years ranging from 2002-2007, and will be re-surveyed in the spring of 2013 (prior to a decision being made on this project). Professional botanists surveyed the Activity Area units using intuitive controlled methodology, wherein areas supporting high potential habitat were surveyed more intensively. (The same methodology would be applied to surveys slated to occur in the spring of 2013.) Surveys were also conducted in compliance with the 2001 Survey and Manage protocol, which requires surveys for Category A and C species. Survey and Manage protocol requires managing known (documented) sites of Category A, B, C, and E species, managing 'high-priority' Category D species, and no site management requirement of Category F species. Surveys pertaining to units surveyed in 2011/12 revealed the following new sites (see Table 24); (8) *Chaenotheca ferruginea*, (1) *Camassia howellii*, (2) *Cypripedium fasciculatum*, (3) *Leptogium teretiusculum*, and (1) *Fritillaria gentneri.*

Supplemental Authorities to be Considered (BLM Handbook 1790-1 Appendix 1, Executive Orders, and public comments). This table lists some of the other authorities that may apply if the Proposed Action (Alternative 2) described in the Environmental Assessment was implemented.		
Critical Element of the Human Environment	**Status** **1/ Not Present** **2/ Not Affected** **3/ Affected**	**Interdisciplinary Team Remarks** **1/ If not affected, why?** **2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in the 1995 RMP to reduce or avoid environmental harm**
Special Status Species, and Survey and Manage (not including T/E): Plant Species/Habitat (continued)	Not Affected	In addition to surveys completed for the Jumping Bean Ecological Forestry Project, Medford District's rare plant database, GeoBOB (Oregon/Washington Geographic Biotic Observation (GeoBOB)), was referenced to locate sites found during previous surveying efforts which overlapped into final Jumping Bean Ecological Forestry Project units. Past survey results revealed the following sites which require application of Project Design Features: (1) *Chaenotheca ferruginea*, (1) *Chaenotheca subroscida*, (2) *Camassia howellii*, (1) *Rhizopogon truncatus*, (1) *Chlorogalum angustifolium*, (2) *Leptogium teretiusculum*, and (3) *Cypripedium fasciculatum* sites. All sites, whether historical or resulting from the most recent surveys, have been compiled and listed in Table 24 of *Appendix 6, Special Status Plant Specialist Report*. **Bureau Special Status, and Survey and Manage Fungi** With the exception of incidental fungi sites reported by contractors, the Jumping Bean project was not surveyed for ISSSP Sensitive fungi. Pre-disturbance surveys for Special Status fungi are not practical, nor required per BLM – Information Bulletin No. OR 2004-121, which states "If project surveys for a species were not practical under the Survey and Manage standards and guidelines (most Category B and D species), or a species' status is undetermined (Category E and F species), then surveys will not be practical or expected to occur under the Special Status/Sensitive Species policies either (USDA/USDI 2004a, p.3)." Current special status fungi were previously in the aforementioned S&M categories which did not consider surveys practical, and are therefore exempt from survey requirements (See Table 25). With the recent instatement the new Interagency Special Status Species policy (ISSSP), 14 species of fungi were designated as Sensitive; 10 are suspected to occur on Medford District, while the remaining 4 have been documented (Table 25). As mentioned above, none of these species require surveys. Of the 4 documented species, two (per the Oregon/Washington Geographic Biotic Observation (GeoBOB) database), *Phaeocollybia californica* (PHCA40) and *Rhizopogon ellipsosporus* (RHEL3), have been found in the Grants Pass Resource Area. The closest *Phaeocollybia californica* site exists approximately 10 miles west/southwest from the closest unit in the Jumping Bean Ecological Forestry Project Activity Area, and the closest *Rhizopogon ellipsosporus* site is approximately 0.5 miles from the closest unit in the Jumping Bean Ecological Forestry Project.

Supplemental Authorities to be Considered (BLM Handbook 1790-1 Appendix 1, Executive Orders, and public comments). This table lists some of the other authorities that may apply if the Proposed Action (Alternative 2) described in the Environmental Assessment was implemented.		
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Special Status Species, and Survey and Manage (not including T/E): Plant Species/Habitat (continued)	Not Affected	For PHCA40, dispersal via spore transport and/or mycelia network are improbable, as these sites and the Activity Area reside in different HUC 5 watersheds (the PHCA40 site is in the Hellgate Canyon – Rogue River HUC5, whereas the Jumping Bean Ecological Forestry Project is in the Grants Pass – Rogue River and Jumpoff Joe HUC5s) and the Hellgate Canyon – Rogue River HUC5 is separated from the other aforementioned watersheds by steep ridges, several ravines, and major road systems. There are no documented sites of *P. californica* in the Grants Pass – Rogue River and Jumpoff Joe HUC5 watersheds, where the Jumping Bean Ecological Forestry Project Planning Area is located. In the case of RHEL3, dispersal via spore transport and/or mycelial network is more probable, as it is only 0.5 miles away from the closest unit. However, there are differences in site conditions that may decrease the probability of spore/mycelial network dispersal. The known RHEL3 site is located on a northwestern aspect, whereas the unit is located on a northeasterly aspect. As the unit prescription calls for 40% canopy retention, is only 16.9 ac in size, and is in an area that has undergone extensive botanical surveys, the probability of an RHEL3 site within the unit is low. Additionally, the probability of an RHEL3 site occurring in the unit and experiencing resource management at a level which jeopardizes species persistence is even lower. While it is possible that this project is occurring within potential habitat for some species, there is very little information available describing the *exact* habitat requirements or population biology of these species (USDA/USDI 2004d, p.148). The 2004 FEIS to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines addresses this type of incomplete and/or unavailable information (p. 108-109). However, the *2004 Record of Decision* (ROD) *to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines*, offers a broad scale prospective of this current situation in stating, "Any discussion of risk based on rarity and likelihood of disturbance must recognize that, for many species, only a small percentage of potential habitat has been surveyed. Reserves have not been surveyed to the same degree as Matrix and Adaptive Management Area land allocations. The Reserves were not surveyed because there has been little management-induced disturbance there.

Supplemental Authorities to be Considered (BLM Handbook 1790-1 Appendix 1, Executive Orders, and public comments). This table lists some of the other authorities that may apply if the Proposed Action (Alternative 2) described in the Environmental Assessment was implemented.		
Critical Element of the Human Environment	**Status** **1/ Not Present** **2/ Not Affected** **3/ Affected**	**Interdisciplinary Team Remarks** **1/ If not affected, why?** **2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in the 1995 RMP to reduce or avoid environmental harm**
Special Status Species, and Survey and Manage (not including T/E): Plant Species/Habitat (continued)	Not Affected	The vast majority of pre-disturbance surveys have been located in the Matrix and Adaptive Management Area land allocation (19 percent of the northwest Forest Plan area), so that is where many of the known sites have been found. This does not mean that a disproportionate amount of their habitat is located in Matrix. If these species are truly closely associated with late-successional or old-growth forests, we can reasonably expect that the large amount of federally managed lands in Late-Successional and Riparian Reserves which provide the most amount of this type of habitat (86 percent of currently existing late-successional forests is in reserves) would also provide, at a minimum, its proportionate share of the habitat to support populations of these species (2004 ROD to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines, p.11)."
Soil Productivity and Compaction	Affected	Long term soil productivity is the capability of soil to sustain natural growth potential of plants and plant communities over time. The most common types of disturbances affecting soils and associated long term productivity are displacement and compaction. Soil compaction and displacement, which affects growth, is a combined effect which cannot be separated (BLM 1994, Vol. 1, p. 4-13). The unit of measurement for this analysis is based on acre calculations of each unit independently. This unit of measurement and scale was selected for this analysis based on productivity losses of concern being associated with the harvest treatments directly. Compaction/disturbance values for this project would be below the 5% productivity loss per unit and less than 12% compaction/disturbance associated with ground based harvest systems (BLM 1995, p. 166). *Refer to Section* 3.4 *of the EA for a discussion of the affected environment and environmental effects of the alternatives related to this element of the environment.*
Vegetation Resources	Affected	The Proposed Action would result in greater increases in tree growth. Stand densities would be reduced to increase the availability of light, water, nutrients and growing space for selected retained trees. Proposed treatments would promote increased stand and tree vigor as well as development of larger crowns on retained trees. Fewer, but larger trees throughout their diameter classes would make up these stands in the long term. *Refer to Section* 3.3 *of the EA for a discussion of the affected environment and environmental effects of the alternatives related to this element of the environment. See Appendix 3 for the Silvicultural Prescription.*

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Critical Element of the Human Environment	**Status** **1/ Not Present** **2/ Not Affected** **3/ Affected**	**Interdisciplinary Team Remarks** **1/ If not affected, why?** **2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in the 1995 RMP to reduce or avoid environmental harm**
Soil Erosion	Affected	Tractor and cable yarding corridors, landing construction and rehabilitation, hauling, road maintenance and use, temporary route construction and reconstruction (including associated route decommissioning) are proposed as part of the Proposed Action. These activities would result in soil compaction and disturbance that would increase erosion. Compaction would not exceed 12% within any one unit, keeping impacts from compaction within those levels assessed under the 1995 RMP. Offsite erosion and subsequent stream sedimentation is discussed in the Water Quality section of this appendix. *See Section 3.5: Soil Erosion and Sensitive Soils for a discussion of the affected environment and environmental effects of the alternatives related to this element of the environment.*
Soil - Mass Wasting	Not Affected	Mass wasting causes increases in erosion that may lead to stream sedimentation, and damages to road systems. The risk of large scale mass wasting within this Planning Area is low, as soils in this region are generally not highly prone to debris flows or other large scale events. Small slumps and slides are common and are found throughout this Planning Area, primarily at contact points between different geologic formations, or in association with roads. Each unit was closely examined on the ground for any indicators that a unit would be at an increased risk of mass wasting if tree harvest, yarding, temporary route construction, or road reconstruction were to occur. Following an on-the-ground examination of each unit, it was determined that the risk of mass wasting would not be elevated within any of the final proposed project units.
Visual Resources	Not Affected	Proposed activities are located in VRM (Visual Resource Management) Class II-IV category lands under the 1995 Medford RMP. These VRM categories allow for varying amounts of modifications to the existing character of the landscape. The Proposed Action is consistent with these visual resource management objectives as stated in the 1995 Medford District Resource Management Plans. The Visual Contrast Rating Worksheet was completed from Key Observation Points (KOPs) as a field tool to assess if the proposed activities would change the characteristic landscape. *See Appendix 9 – Visual Resource Management for further details on the affected environment and environmental effects of the alternatives related to this element of the environment.*

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Critical Element of the Human Environment	**Status** **1/ Not Present** **2/ Not Affected** **3/ Affected**	**Interdisciplinary Team Remarks** **1/ If not affected, why?** **2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in the 1995 RMP to reduce or avoid environmental harm**
Water Resources (not including water quality)	Not Affected	Watershed hydrology can be affected during timber harvest by soil compaction and increased open space. Under the Proposed Action, a total of 69.4 acres may be compacted from skid trails, landings, and temporary route construction. This would result in a net increase in compaction within this Planning Area of less than 0.1%. Since these watersheds are currently well below 12% watershed compaction known to result in substantial changes in runoff timing and peak flows, these increases would not be of a magnitude that would result in any measurable change in watershed hydrology. Within each unit, localized increases in surface flows at the compaction site could occur that would result in an increase in surface erosion. However due to the unaffected soils that would be left on each of these sites, these localized instances of surface erosion would infiltrate back into the unit soils. Upon completion of harvest, all compacted areas associated with temporary route construction would be sub-soiled, reducing the magnitude of soil compaction. There may also be a slight increase in groundwater flow below vegetative harvest sites. Water sources with legal water rights have been located and assessed to ensure impacts from vegetation harvest would not result in reduced ground water in springs where domestic water is obtained. The Jumping Bean Ecological Forestry Project proposed treatments would not create any continuous areas of overstory forest canopy openings that would contribute to open space in the Planning Area (WPN, 1999). The Variable Density Thinning would have discontinuous openings between ¼ and 1 acre in size. Small canopy gaps are not sufficient to measurably alter watershed hydrology. Road maintenance, temporary route construction and reconstruction would only remove individual or small pockets of trees. As such, the Proposed Action would not have canopy gaps that would be large enough to result in a measurable effect on watershed hydrology; including no increases in peak flows, or changes in low flows, base flows, runoff timing, subsurface flow, or water storage. Since watershed hydrology would not be affected this project would not affect municipal or domestic water use or water rights.

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Critical Element of the Human Environment	**Status** **1/ Not Present** **2/ Not Affected** **3/ Affected**	**Interdisciplinary Team Remarks** **1/ If not affected, why?** **2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in the 1995 RMP to reduce or avoid environmental harm**
Late-Successional Forest	Not Affected	There are approximately 6014 acres of late seral stage forest in the Planning Area boundary plus 161 separate acres of RA-32 and 319 separate acres of owl cores amounting to roughly 6,500 acres or 11% of the project area: (6500/56109)*100. Of these acres, 79 acres will be thinned while leaving trees >150 years in age. Because there are no regeneration harvest treatments prescribed and these are treatments that do not remove trees over 150 years in age, no late successional forests would be removed as part of this project.
Migratory Birds Species of Concern (U.S. Fish and Wildlife Service 2008)	Not Affected	Both the U.S. Fish and Wildlife Service (2002) and Partners in Flight (Altman 1999) consider the state and regional approach a key to the conservation of migratory songbirds. The Birds of Conservation Concern (BCC) (USFWS 2008c) identifies species, subspecies, and populations of migratory and non-migratory birds in need of additional conservation actions that are deemed to be the highest priority for conservation actions. The BCC 2008 encompasses three distinct geographic scales—North American Bird Conservation Initiative (NABCI) Bird Conservation Regions (BCRs), USFWS Regions, and National—and is primarily derived from assessment scores from three major bird conservation plans: the Partners in Flight North American Landbird Conservation Plan, the United States Shorebird Conservation Plan, and the North American Waterbird Conservation Plan. The Northwest Forest Plan as an effort in the same type of conservation planning process, which approaches management at a regional level. The Proposed Action is consistent with the Northwest Forest Plan, which is also designed to provide for the conservation of other forest-related species in the range of the Northern Spotted Owl, such as these birds that may occur. The potential failure or loss of some nests would not be measurable at the regional scale because of the small scope of the project in relationship to the regional scale. Therefore, the Proposed Action would not affect the populations in the regional scale.
Migratory Birds Species of Concern (U.S. Fish and Wildlife Service 2008) (continued)	Not Affected	Within the Northwest Forest Plan (24,455,300 federal acres), reserved/ withdrawn lands total approximately 78% of the federal land base (USDA/USDI 1994, p. 2-62:65). Not all of the reserves are in or will obtain late-successional forest conditions, but the majority is expected to contribute as suitable habitat toward migratory birds utilizing late successional habitat. In addition, Matrix lands (3,975,300 acres) representing about 16% of the federal land base, contain selected portions of the land managed to retain 15-30% in late-successional forest, which provides additional suitable habitat. *See Appendix 7 – Migratory Birds for a discussion of the affected environment and environmental effects of the alternatives related to this element of the environment.*

Supplemental Authorities to be Considered (BLM Handbook 1790-1 Appendix 1, Executive Orders, and public comments). This table lists some of the other authorities that may apply if the Proposed Action (Alternative 2) described in the Environmental Assessment was implemented.		
Critical Element of the Human Environment	**Status** **1/ Not Present** **2/ Not Affected** **3/ Affected**	**Interdisciplinary Team Remarks** **1/ If not affected, why?** **2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in the 1995 RMP to reduce or avoid environmental harm**
Survey and Manage and Special Status Species (not including T/E): Wildlife Species/Habitat	Not Present (Fisher – Candidate species) Not Affected (Survey and Manage: Red Tree Vole)	Over the past 15 years, the BLM has conducted surveys using bait stations with motion and infrared detection cameras following established survey protocol for forest carnivores (Zielinski and Kucera 1995). Over this sample period, a total of 66 camera stations were placed within a 10 mile radius of the Planning Area. No fishers were detected during these survey efforts. Additionally, the Oregon Department of Fish and Wildlife conducted their own survey efforts utilizing the same protocol methods and sampled several areas within the Planning Area. These surveys did not detect fisher as well (Niemela 2012). Fishers have never been detected with camera surveys north of the Rogue River in the Siskiyou mountains. Therefore, the fisher is not considered to be present in the Planning Area and would be unaffected by project activities. Protocol surveys were conducted across the Planning Area where proposed project activities triggered the need for pre-disturbance surveys in suitable Red Tree Vole (RTV) habitat (USDA/USDI 2002, USDA/USDI 2011). In total, 1,248 acres were surveyed for RTVs in conjunction with project activities under the Jumping Bean Ecological Forestry Project. These surveys resulted in the detection of 53 active and 48 inactive RTV nests, for a total of 111 RTV nests and 58 sites. As a result of these detections, approximately 270 acres were delineated around 55 sites where project activities would follow current management recommendations for this species (USDA/USDI 2000), including limiting management activities in these areas to Hazardous Fuel Reduction. The remaining 3 sites would not be protected with full management recommendations as these sites have been released from management following the established procedure of Identification of Non-high Priority (NHP) Sites (BLM 2012). The analysis used to support the release of these 3 sites is included in this EA in Appendix 11.

Supplemental Authorities to be Considered (BLM Handbook 1790-1 Appendix 1, Executive Orders, and public comments). This table lists some of the other authorities that may apply if the Proposed Action (Alternative 2) described in the Environmental Assessment was implemented.		
Critical Element of the Human Environment	**Status** **1/ Not Present** **2/ Not Affected** **3/ Affected**	**Interdisciplinary Team Remarks** **1/ If not affected, why?** **2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in the 1995 RMP to reduce or avoid environmental harm**
Survey and Manage and Special Status Species (not including T/E): Wildlife Species/Habitat (continued)	Not Affected (Survey and Manage: Red Tree Vole) Not Affected (Survey and Manage: Great Gray Owls)	The Red Tree Vole (RTV) is a Survey and Manage species for which the management goal is to provide for species persistence at the population level (USDA USDI 2001). The Variable Density Thinning (VDT) proposed in these 3 RTV sites identified for NHP status would reduce the habitat quality for RTVs in these selected areas by reducing the amount of canopy cover and canopy interconnectivity. However, the VDT treatments are expected to improve habitat quality in these stands in the long term (>20 years) by accelerating the development of relatively homogeneous stands towards late-successional habitat faster than if the stands were left untreated (Hayes et al., 1997). A large number of known active and inactive RTV nests and sites would remain throughout the Planning Area and would be protected from adverse impacts in accordance with current management guidelines (USDA/USDI 2000). The thinning of these 3 RTV sites is expected to have negligible impacts to the RTV populations within the Planning Area as a whole and overall persistence of this species within the watershed. Great gray owls are not listed as Sensitive or Strategic species in Final State Director's Special Status Species List (BLM 2008b) or USFWS Birds of Conservation Concern for BCR 5 (USFWS 2008b). Suitable Great Gray Owl (GGO) nesting habitat exists in the Planning Area; however suitable foraging habitat is very limited. Surveys were completed for proposed units with suitable nesting habitat in 2011 and 2012 These surveys resulted in detection of a single male GGO on three occasions in 2011, but no pair or nest was detected. Surveys of this area in 2012 did not detect any GGOs. There is a low likelihood that GGOs would be directly affected at the population level because protocol surveys did not detect any GGO pairs or nest sites in the Planning Area The treatments proposed under the Proposed Action are anticipated to improve habitat conditions for this species across the Planning Area in the by accelerating or stabilizing the growth rates of residual large trees in treated areas (Latham and Tappeiner 2002) and reducing the risk of nesting habitat loss from wildlife.

Supplemental Authorities to be Considered (BLM Handbook 1790-1 Appendix 1, Executive Orders, and public comments). This table lists some of the other authorities that may apply if the Proposed Action (Alternative 2) described in the Environmental Assessment was implemented.		
Critical Element of the Human Environment	**Status** **1/ Not Present** **2/ Not Affected** **3/ Affected**	**Interdisciplinary Team Remarks** **1/ If not affected, why?** **2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in the 1995 RMP to reduce or avoid environmental harm**
Survey and Manage and Special Status Species (not including T/E): Wildlife Species/Habitat (continued)	Not Affected (Survey and Manage and Bureau Sensitive: Mollusks)	This project is not anticipated to affect any Survey and Manage mollusk species because the proposed treatments do not occur within suitable habitat for *Helminthoglypta hertleini* and the Planning Area is outside the range of *Monadenia chaceana.* Habitat exists in the Planning Area for the Survey and Manage mollusk, *Monadenia chaceana*. However, the pre-disturbance survey requirement for the GPRA was removed in the *Survey Protocol for the Survey and Manage Terrestrial Mollusk Species from the Northwest Forest Plan, Version 3.0*, since the *Monadenia chaceana* range change (USDA and USDI 2003). Therefore, no surveys have been completed for the Jumping Bean Ecological Forestry Project. Additionally, since the late 1990s, more than 17 landscape management planning areas throughout the GPRA have been surveyed for mollusks using the terrestrial mollusk survey protocol (USDA and USDI 1997 and USDA and USDI 2003). These survey efforts have revealed no detections of *Monadenia chaceana*. *See Appendix 8 – Wildlife Special Status Species for a discussion on the environmental effects of the Proposed Action related to this element of the environment. The NEPA case file contains the Survey and Manage Tracking Sheet for Wildlife Species per the 2011 Survey and Manage Settlement Agreement.*
Port-Orford-cedar	Not Affected	Project is outside the natural range of Port-Orford-cedar (POC).
Greenhouse Gases and Carbon Storage	Not Affected	Scientific knowledge on the interrelationship between greenhouse gas levels and climate change is rapidly changing. Substantial uncertainties and key limitations exist. Because forests store carbon, they can affect atmospheric concentrations of carbon dioxide, a greenhouse gas. Forest management can change the amount of carbon stored in a forest. Treatments of the Proposed Action were compared to treatments in other recent projects and found to be similar. Carbon storage and carbon emissions of the Proposed Action were calculated to determine the net contributions of greenhouse gases resulting from the treatments. Those carbon calculations were based on assumptions in the 2008 FEIS (BLM 2010b, Appendix C) and subsequent improvements to those assumptions, as set forth in R. Hardt, personal communication, November 6, 2009 (on file in the Medford District BLM Office, and incorporated here by reference).

Supplemental Authorities to be Considered (BLM Handbook 1790-1 Appendix 1, Executive Orders, and public comments). This table lists some of the other authorities that may apply if the Proposed Action (Alternative 2) described in the Environmental Assessment was implemented.		
Critical Element of the Human Environment	**Status** **1/ Not Present** **2/ Not Affected** **3/ Affected**	**Interdisciplinary Team Remarks** **1/ If not affected, why?** **2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in the 1995 RMP to reduce or avoid environmental harm**
Greenhouse Gases and Carbon Storage (continued)	Not Affected	Carbon storage was analyzed by quantifying the change in carbon storage in *live trees*, storage in forests *other than live trees* (dead wood and roots, non-tree vegetation, litter and soil organic matter), and storage in *harvested wood* products. Changes in forest ecosystem carbon over time were calculated using site specific data and the ORGANON Growth Model (Hann et al., 2007). Stand volume in cubic feet per acre per year was used to calculate tonnes of carbon stored per year. Carbon emissions (carbon dioxide) were calculated from timber harvest activities (including fuel consumption) and post-harvest fuel treatments. Net carbon storage was calculated by subtracting carbon emitted from carbon stored. Similar to treatments in the other projects, Jumping Bean Ecological Forestry Project treatments would reduce carbon stores temporarily but would result in net increases over time. For units similar to the Jumping Bean Ecological Forestry Project thinning units (VDT) growth within 5 years following treatment would result in carbon storage that exceed direct and indirect carbon emissions, resulting in a net storage of carbon compared to pretreatment conditions. Density Management/Hazardous Fuel Reduction units would result in a net storage of carbon compared to pretreatment conditions within 10 years. In addition, the treatments in the Jumping Bean Ecological Forestry Project would reduce the burning intensity of future fires which in the long-term would maintain higher carbon stores on the landscape.

APPENDIX 2 – RESPONSE TO SCOPING COMMENTS

(DOI-BLM-M070-2012-003-EA)

The Jumping Bean Ecological Forestry Project Scoping Reports (February and August 2012) were each released for 30-day public scoping comment period.

Comments were considered in the development of the Jumping Bean Ecological Forestry Project. BLM responses to substantive comments identified during scoping are presented in this Appendix of the EA.

Substantive comments do one or more of the following (BLM Manual, National Environmental Policy Handbook, 1/30/2008):

- question, with reasonable basis, the accuracy of information
- question, with reasonable basis, the adequacy of, methodology for, or assumptions used for the environmental analysis
- present new information relevant to the analysis
- present reasonable alternatives
- cause changes or revisions in one or more alternative

Comments that are not considered substantive include the following:

- comments in favor of or against the proposed action or alternatives without reasoning that meet the criteria listed above (such as "we disagree with Alternative Two and believe the BLM should select Alternative Three).
- comments that only agree or disagree with BLM policy or resource decisions without justification or supporting data that meet the criteria listed above (such as "more grazing should be permitted").
- comments that don't pertain to the Activity Area or the project (such as "the government should eliminate all dams," when the project is about a grazing permit).
- comments that take the form of vague, open-ended questions.

If a number of comments are identical or very similar, agencies may group comments and prepare a single answer for each group. Depending on the volume of comments received, responses may be made individually to each substantive comment or similar comments may be combined and a single response made. The Code of Federal Regulations (40 CFR §1503.4) identifies five possible types of responses for use with environmental impact statements.

1. Modify action alternatives.
2. Develop and evaluate alternatives not previously given serious consideration by the agency.
3. Supplement, improve or modify the analysis.
4. Make factual corrections.
5. Explain why the comments do not warrant further agency response, citing the sources, authorities or reasons which support the agency's position and, if appropriate, indicate those circumstances which would trigger agency reappraisal or further response.

Scoping comments from Klamath Siskiyou Wildlands included six pages of quotes from the Grave Creek Watershed Analysis (1999) and Jumpoff Joe Watershed Analysis (1998). The quotations have been grouped and summarized within the responses below and are noted by italic font. Where topics overlap with other topic headings, they will be found under one topic description, not under each topic category.

Forest Management and Stand Health

- *Apply Southern GFMA management to low elevation, south and west facing slope pine stands, meaning favor pines and retain higher tree retention levels.*
- *Give high management priority to: commodity harvests that reduces fire hazard and risk; and stands in the rural interface and residences, owl core areas, Riparian Reserves, overstocked stands, and remnant pine stands with Douglas-fir encroachment.*
- *Maintain late-successional stands in drainages: Quartz, Jumpoff Joe, and Jack Creeks.*
- *High densities of small diameter vegetation may result in intense fires, disease, and insect damage.*
- *Fire suppression has resulted in smaller coarse woody debris (CWD) and snags. KS Wild requests CWD densities to support the natural range of biota for the site. The Northwest Forest Plan adaptive management direction encourages site-specific research and planning for CWM retention (RMP, p.47).*
- *Amount of old-growth forest habitat is probably less than historic conditions due to logging.*

(1) Comment: Requests no logging of trees over 21 inches in diameter since there is a "severe deficit in the watershed" of larger diameter trees. Requests an "iron-clad assurance" that large diameter trees would not be cut as a part of a dry forest restoration project.

BLM Response: This Western Oregon Ecological Forestry Project applies the ecological forestry work of Oregon and Washington professors Dr. Norm Johnson and Dr. Jerry Franklin and is designed to be consistent with the Medford District's RMP. Treatment goals are aimed to restore forest resiliency, characteristic species composition, and structural heterogeneity of dry forest ecosystems which is characteristic of late-successional forests, and the natural mosaic composition of southern Oregon forests where fire is a natural process of the landscape. The Jumping Bean Ecological Forestry Project is a dry forest restoration management project that would generally retain trees older than 150 years including legacy trees, oaks, and hardwoods.

See Section 2.2.1 for a further explanation regarding the specific objectives of the different treatment proposals to meet dry forest restoration, which also encompasses prescriptions designed to increase ground cover suitable to the site and growing conditions that provide for the establishment of early seral tree species in addition to retaining older trees with high canopy closure.

The RMP does not provide a diameter limit in the Matrix (1995 RMP) land allocation.

(2) Comment: Requests road density reduction, noxious weed abatement, and riparian restoration be applied for restoring forest health as a part of this project.

BLM Response: Road density and riparian restoration work has been completed within this Planning Area through other efforts outside of the Jumping Bean Ecological Forestry Project. For the Jumpoff Joe Creek Watershed, transportation management objectives were developed in 2001 for BLM roads. Recommendations for road improvements, closures, and decommissioning were established and are implemented as funding allows and NEPA requirements are met. Within the last 7 years, there have been several restoration projects in this Planning Area that have been implemented to reduce erosion and improve stream function. The 35-5-26.2 and 35-5-21 roads receive 1.76 miles of bituminous chip seal, and had ditch cleaning preformed where needed to improve drainage. Approximately 0.7 miles of the 35-5-26.5 road was reshaped and had armored rolling dips installed.

Approximately 20 miles of skid trail, spur road, and landings were decompacted using a winged ripper. There were approximately 2 miles of non-designated, user created OHV trails that were blocked with earthen berms and covered with woody debris to reduce erosion. At five locations along the 35-5-26.4 road, approximately 1,500 feet of bare, eroded cut banks, in granitic soils and weathered rock, were hydro-mulched and seeded with native species to reduce cut bank erosion entering the ditchline. There were also three logs and five boulders that were placed within Louse Creek to improve stream function and fish habitat.

Noxious weeds treatments occurred in 2010 and 2011 for the Project Area through application of the *Medford District Integrated Weed Management Plan Environmental Assessment (1998*), during survey worked completed for this project (see Appendix 1 and 5 for further details).

(3) Comment: Will the variable density approach as is outlined in the restoration principles be applied to the non-commercial areas?

BLM Response: A variable density approach that meets the dry forest restoration principles of Drs. Norm Johnson and Jerry Franklin would be applied to non-commercial treatment areas for this project. See Section 2.3.1 for further treatment details for Density Management (DM), which would apply skips and gaps outside of Riparian Reserves, similar to the treatment type of Variable Density Thinning. Commercial timber extraction may occur under this treatment however; such material would be a by-product of the treatment and is not a driver for this treatment type. Some of this treatment would also include non-commercial components such as thinning diameters less than merchantable material. Hazardous Fuel Reduction would also be coupled with DM.

(4) Comment: Requests low-impact yarding systems be applied especially within riparian areas. “Traditional yarding systems cannot accomplish the variable density that was characteristic in the planning area”.

BLM Response: While the commenter did not specifically note which type of yarding systems they consider to be "low impact" to uplands and riparian areas to meet the Medford District RMP and the Clean Water Act.

(5) Comment: Requests minimizing new landing construction.

BLM Response: The Environmental Assessment addresses project design features for landing construction which incorporates consideration of your comment (EA section 2.2.3).

(6) Comment: The BLM has previously indicated that the silvicultural prescription for this project may involve "mostly small and medium sized trees, but can include removal of some larger young trees." The removal of larger trees exhibiting late-successional structure will greatly increase the ecological impacts and social controversy of the proposed timber sale and will not contribute to dry site forest restoration objectives.

BLM Response: As stated in the EA, trees greater than 150 years of age would not be prescribed for removal. The prescribed treatments aim to "restore, maintain, or enhance the compositional, structural, and functional ecological processes and components in the ecosystem across both spatial and temporal scales. Fire exclusion in the watershed has caused much of the unmanaged landscape to exhibit homogenous forest dominated by Douglas-fir. These transformations have made the forests more susceptible to large, high-severity fires and to epidemic attack by insects and disease (p. 9 of BLM, 1998a). Retaining and nurturing older trees and other significant structural elements of the Dry Forest stand is the starting point in the application of Ecological Forestry to Dry Forests. Saving trees older than 150 years in age in these stands requires the removal of the trees around them to reduce ladder fuels and competition. Removing some larger young trees is also designed to increase stand heterogeneity. The desired future condition is to maintain a sustainable system that is fire resilient and provides a sustainable production of natural resources (BLM 1995)," (Appendix 3 of the EA).

The removal of large trees <150 years old is entirely compatible and consistent with dry site forest restoration objectives as designed by the ecological expertise of these distinguished professors and respected ecologists. Dr. Norm Johnson and Dr. Jerry Franklin are considered experts in the field of ecosystem science and management. Dr. Jerry Franklin is a Professor of Ecosystem Analysis at the College of Forest Resources, University of Washington and Dr. Norm Johnson is a University Distinguished Professor at Oregon State University's College of Forestry.

The need to cut commercial size trees in Matrix is based on a silvicultural prescription to balance the objectives of continuous timber production while applying Drs. Norm Johnson and Jerry Franklin'secological forestry principles of dry forests.

(7) Comment: The commenter states large trees provide disproportionate hydrological benefits to watersheds. "The crowns of such trees help moderate peak flow events via canopy cover. Large live trees are the only source of future large down wood, which also helps to filter and moderate water flow throughout the year."

BLM Response: See Appendix 1 regarding peak flows. Since these watersheds are currently well below 12% watershed compaction known to result in substantial changes in runoff timing and peak flows, these increases would not be of a magnitude that would result in any measurable change in watershed hydrology. Treatments in Riparian Reserves would be specifically designed to promote the development of future large woody debris, a healthy mix of riparian species, and multi-story canopies, see Section 3.5.2.2 (*Riparian Reserve Thinning Treatments*) for further details.

(8) Comment: The commenter notes the Thom Seider FEIS (page 343) which notes both the Klamath National Forest and the Environmental Protection Agency acknowledge that the diameter of conifer trees acts as a "measure of resistance to fire." The commenter concludes the forest resiliency goals of the Jumping Bean project may be best achieved by retaining such trees where they still exist in the watershed. That federal agency analysis contained in that FEIS may be viewed:
http://www.fs.fed.us/nepa/fs-usda-pop.php/?project=16796

BLM Response: Forest restoration thinning activities proposed would mimic the natural function of fires by thinning to reduce stand densities and would contribute to a fire resilient landscape.

Section 3.2 of the EA analyzes the No Action and Proposed Action alternatives for fire hazard:

Section 3.2.3.2

- Treatments would reduce ladder fuels and the risk to older trees from wildfire and competition, while favoring more fire and drought tolerant tree species. Thinning treatments would reduce torching and crowning potential by increasing canopy base height.
- The proposed Density Management would be designed to retain key structural elements (e.g., large trees, snags, coarse woody debris, hardwoods, higher canopy cover) while reducing overly dense stands and protecting habitat from stand replacing fire".

Section 3.2.3.1

- Under the No Action Alternative, "[s]tands would remain in their current fuel type and fuel loading and fire behavior potential would continue to increase".
- The Planning Area would remain in moderate to high fire hazard, resulting in a higher potential of increased fire behavior if a wildfire occurs. The potential for increased fire behavior would create a greater risk for private land, homes, and resources in the Jumping Bean Ecological Forestry Project Planning Area.

(9) Comment: The commenter states restoration forestry and the RMP provide for active management to create decadence such as large snags. Passive management of merely retaining existing snags may not be adequate in all units because marking appears to be targeting those trees most likely to die in the future, thus depriving wildlife a steady and sustainable supply of snags and down wood habitat. For example, unit 21-11 is a mature stand with apparently few snags. Marking appears to be eliminating those trees

that would likely become large snags thus assuring a long-term lack of snag and down wood habitat.

We recommend that:

- Marking guidelines be adjusted to include retaining (on average) at least one large (>20 dbh) tree per acre that is likely to die or has decadent deformities.
- The RMP requires additional trees per acre be retained when few snags are in the mature stand.
- Stands be evaluated after all treatments (including underburning) are completed to determine if they have adequate large snags. Active management would then create clumps of snags to meet desired snag densities. Franklin et al. (2007:32) discuss decadence creation with deliberate killing or injuring to induce decline.

BLM Response: The prescription retains trees over 150 years in age. These trees will be the oldest and largest trees in the stand that typically exhibit decadent deformities. These leave trees would also become the best quality snags and down wood habitat when they die. Leaving trees over 150 years in age would provide a legacy of the pre-harvest stand as high quality future structure.

A minimum of 120 linear ft of logs per acre greater than or equal to 16 inches in diameter and 16 ft long in decay classes 1and 2 are directed to be left under the Resource Management Plan General Forest Management Area Management Action/Direction (BLM 1995 p.39) for coarse woody debris (CWD) (see project design features, EA p. 36).

In the Environmental Assessment, section 3.7.2.1 (No Action - Northern spotted owl) - These trees would stand as small-diameter snags and ultimately fall, but would not create openings as occur in late-seral stands because of their small size.

In the Environmental Assessment, section 3.7.2.2 (Proposed Action- Northern spotted owl) A specific goal of the prescription is to leave the largest and oldest trees in the stand, and retain all large hardwoods and snags.

(10) Comment: The commenter states a large numbers of mature trees will be removed from proposed logging units. These trees would have otherwise created snags and down wood for wildlife. What is the reduction in large snag/down wood supply over time (beginning with this logging project)? Since many of these trees are 100 years old, the reduced snag supply may persist for at least several hundred years.

BLM Response: Large numbers of mature trees are being left in the retention of trees over 150 years of age, in the retention of mature trees within 186 acres of RA-32 exclusions, 270 acres of RTV buffers, 745 acres of untreated northern spotted owl cores, and the remaining 17,487 acres of BLM land where no commercial harvest is proposed. Please also see response to Comment #9.

(11) Comment: The commenter requests the public and the Decision Maker know the number and size of trees to be logged, for trees >30 inches dbh and 20-30 inches dbh from each unit. The most informative way of disclosing this data would be to report the

pre-logging number of trees in these size classes and the post-logging number and size of trees in these size classes. We have previously reviewed modeled results of these data for other timber sales (East West Junction). The commenter believes the data is available for NEPA purposes for this project and believes the BLM is required to disclose this information for comment and analysis *prior* to issuing the decision to implement the project. In addition the BLM is required by its RMP to retain 16-25 large trees per acre in these units. The proposed action must demonstrate that this standard is being met for each unit logged.

BLM Response: Adequate information is provided about the level of intensity of the proposed activities. The information disclosed in an EA document must be adequate for the decision maker to make an informed decision. The further details requested would not further contribute to the decision making process. The Council of Environmental Quality (CEQ) (40 CFR Parts 1500-1508) states that "Ultimately, of course, it is not better documents but better decisions that count. NEPA's process is not to generate paperwork-even excellent paperwork- but to foster excellent action" (40 CFR § 1500.1 (c)). CEQ clearly states in the same paragraph that "The NEPA process is intended to help public officials make decisions that are based on understanding of environmental consequences…"

The Medford District RMP does not specify that large 16-25 trees per acre be retained in Variable Density Thinning or in Density Management treatments. These numbers are specific to structural retention systems (p.193) and regeneration harvest units (p.75) both of which are not included in this proposal.

Soil Productivity

- *The Grave Creek Watershed has low site productivity.*
- *In sensitive soils, apply special care to retain vegetation for regeneration harvests, restrict road construction, and decommission roads where feasible.*

(12) Comment: KS Wild requests soil chemistry, productivity, hydrology, and biological integrity be addressed in the EA on a site-specific (*i.e.*, unit-by-unit) basis. "Please map soil types and composites using field reconnaissance data and include the maps in the NEPA document. Include a qualified, journey-level soil scientist on the ID Team. Design actions and mitigation *after* you have collected field reconnaissance data on soils at every site proposed for action."

"Please note that page 155 of the Medford District RMP directs the agency to "avoid" ground-based activities on fragile soils. It is essential that this project implement the requirements of the RMP to avoid ground-based yarding on TPCC fragile soils. Please explicitly disclose and analyze actions that the BLM is proposing on TPCC soils in the project area."

BLM Response: Chapter 3 contains the anticipated impacts to these resources. As stated in Section 3.5.1.3 of the EA, soil maps and descriptions of project soil characteristics are available at the USDA Natural Resource Conservation Service (NRCS) web site: http://www.or.nrcs.usda.gov/pnw_soil/or_data.html. The project

design, including PDFs, incorporated the findings of field surveys and investigations for soils.

The EA applies specific PDFs for TPCC fragile restricted and withdrawn soils as developed by the BLM Oregon State Office, "A Synopsis and Updated Guide of the Standard Operational Practices for Upland Soil Productivity in Western Oregon (2010)". This guide provides more specific guidance than the Medford District RMP on maintaining or improving site productivity as well as preventing soil resources from unnecessary impacts or lessening impacts to an acceptable level. Since the adoption of the Medford District RMP, newer harvesting machines and harvest methods have been devised that were not part of the original analysis in the mid-1990s. See Section 2.3.2.3 of the EA for the details of these PDFs and Sections 3.4 and 3.5 analyze the potential impacts of the project on TPCC restricted and withdrawn soils.

Riparian Reserve Thinning

(13) Comment: The commenter questions proposed Riparian Reserve Thinning due to concerns stated as: (1) extensive OHV damage that could be exacerbated by opening up these stands; (2) the proposal to construct new skid trails in these areas; (3) the large amount of small-diameter thinning available outside of Riparian Reserves; and (4) aquatic degradation from past logging and road building activities.

The commenter notes the Jumping Bean Project Revised Scoping Report states that tree extraction would not be prescribed in Riparian Reserves.

BLM Response: There are specific Project Design Features (PFDs) (Section 2.3.2.9) to minimize increased use of OHVs, such as pulling vegetation over skid trails and blocking skid trails so they are un-usable.

There are also specific PDFs (Section 2.3.2.4) to be implemented regarding skid trail and temporary route activities in Riparian Reserves. In summary, skid trail construction would only occur outside of field verified Ecological Protection Zones (EPZs) and constructed during the dry conditions. During construction equipment would be required to walk on slash, and as necessary to prevent off-site erosion, skid trails would be scarified, seeded, mulched, slash cover placed, and waterbarred prior to October 15th of the harvest year. These skid trails would also be decommissioned after use during dry conditions. For temporary route construction and re-construction would only occur during dry conditions. Sediment trapping devices would be properly installed to hydrologically disconnect sites. These roads would be decommissioned after use during dry conditions. The temporary route re-construction into Unit 9-14, which is 0.08 miles, is the only temporary route work that would have hydrologic connection to a stream prior to implementation of additional PDFs that would disconnect this system. This route would be required to be re-constructed and decommissioned within the dry season of one year and when no water is flowing in the intermittent stream channel. See Section 2.3.2.4 for further details.

Page 7 and 8 of this Scoping Report describes the proposed Riparian Thinning, including the potential for extraction harvest. The notation on page 10 of the Scoping Report is an error.

(14) Comment: The commenter provided a copy of a memo supplied by the National Marine Fisheries Service (NMFS) as support that their contention of "commercial thinning the Riparian Reserves is not appropriate and is likely harmful for achieving aquatic conservation objectives".

The memo from NMFS is directed to activities proposed by the Siuslaw National Forest. NMFS makes the following recommendations in this memo:

- The USFS and BLM should include all sizes of wood in describing environmental baseline conditions and in analyzing the effects of its proposed actions, not just pieces of
  wood that are greater than 24 inches in diameter and greater than 50 ft in length.

- The USFS and BLM should adjust their tree diameter targets based on stream size. Database curves are available for both functional-sized and key pieces of wood (e.g., Fox and Bolton 2007).

- The USFS and BLM should leave more thinned trees on the ground in riparian areas,
  particularly close to streams, on floodplains, and on steep sideslopes where some trees
  are likely to slide down into streams, than are required to meet wildlife needs.

- In order to better portray environmental baseline conditions and to understand the likely effects of thinning proposals, the USFS and BLM should develop stand data separately for riparian and upland forests.

BLM Response: The BLM had been discussing the issue of riparian thinning with NMFS for the several years previous to this EA. The memorandum concerning thinning in Riparian Reserves did not originate from published or peer reviewed scientific literature. In the Memorandum, NMFS includes recommendations for the makeup of an interagency science team to address these issues. The NMFS "position paper" is part of an ongoing interagency deliberative process to reach resolution of these issues.

Treatments proposed in the Riparian Reserve are essential to reach goals objectives described in the RMP.

(15) Comment: Requests no further temporary route construction due to the Planning Area being "heavily roaded".

BLM Response: The 1.2 miles of temporary route construction and 0.27 miles of temporary route re-construction to access proposed units, would not result in an increase in road density in this watershed because they would all be decommissioned following use.

Specific placement of all temporary routes would address potential erosion, raveling, and sliding concerns. For further information see Section 3.5.2.2 (Soil Erosion and Sensitive Soils).

It was determined that the project is consistent with the nine objectives and the four components of the ACS.

(16) Comment: Will the BLM consider needed and recommended road decommissioning for this project?

BLM Response: The BLM has considered decommissioning roads for this project. All temporary routes proposed to facilitate actions will be decommissioned following use.

(17) Comment: The commenter requests the direct, indirect, and cumulative effects of proposed activities on hydrologic function, sediment regimes, stream temperatures, nutrient cycling, pH, and habitat connectivity should be evaluated in detail. Consider both positive and negative impacts. The commenter requests implement the ACS at the site scale and to meet its objectives *immediately* after the project's implementation, not in the "long-term" several years out.

BLM Response: Chapter 3.4 and 3.5 of the Environmental Assessment disclose an in depth analysis on direct, indirect and cumulative effects beyond adequate for an informed decision to be made. Please see Appendix 4 - Aquatic Conservation Strategy (ACS) to see how the project is meeting the requirements of ACS. The ACS analysis for the Jumping Bean Ecological Forestry Project is discussed at the site or project scale (HUC 6 and HUC 7) and at the landscape scale (HUC 5) and would be met after project implementation (short term) and long term.

(18) Comment: The commenter states, "Sediment travels farther through Riparian Reserves degraded by roads and timber harvest than through undisturbed reserves because roads and ditches form pathways for sediment to travel down slope that do not exist in roadless reserves. Even in the absence of management activities within a watershed heavy use of existing valley bottom roads by log trucks can substantially increase sediment production."

The commenter states it is the agency's burden to show that the reserves and other project design features would prevent added sediment delivery. Therefore the commenter requests the EA analyze and disclose the impacts of road construction, landing construction, timber haul and soil compaction on peak flows, flow timing, and sediment loading.

BLM Response: The BLM has applied project design features and Best Management Practices to prevent added sediment delivery. Effects to the action alternatives with these mitigation measures are disclosed in Chapter 3 of the EA.

Fisheries

(19) Comment: We recommend the proposed action consider the following to recover coho salmon:

1) Permanently disconnect the most egregious sediment producing roads from the stream network through hydrologic obliteration, outsloping, or construction of drainage features (e.g. rolling dips) or structures (cross drain relief culverts) that direct sediment onto vegetated slideslopes and away from ditches or culverts connected to stream network.
2) Identify fish migration barriers for both juvenile and adult coho salmon. Collaborate with ODFW, watershed council, and private land-owners to provide passage to historic coho salmon distribution within the planning area.
3) Investigate water diversions from BLM lands and take corrective actions.

BLM Response: Harvesting, yarding, landing construction and rehabilitation, temporary route construction and reconstruction (including route decommissioning), road maintenance hauling, and fuel treatments would have no effect on SONCC coho salmon (ESA-Threatened) and coho critical habitat (CCH)(see Appendix 1-Environmental Elements).

(20) Comment: The commenter states the EA cannot disclose sediment impacts by claiming "no change" to existing sediment loads, rather it must disclose the serious nature of sediment loads from logging roads and consider appropriate recovery actions.

BLM Response: The Enviornmental Assessment discloses the effects of the alternatives. Please see Chapter 3 for the analysis performed on impacts to sediment.

(21) Comment: Requests owl "take" be avoided by making the LSEAs large enough for owl nesting, roosting, and foraging around high use areas. Requests focusing thinning on small-diameter trees in a variable "thin from below" to retain mature and late-successional forest character where it still exits.

Wildlife Habitat

- *Concern regarding proximity of high hazard young plantations to high value spotted owl core areas.*
- *Fragmented late-successional stands (due to clearcut logging primarily) are too small to support interior forest habitat.*
- *Provide for east-west connectivity in the Grave Creek Watershed.*
- *Critical Habitat Sub Unit OR-64 is to provide maintain essential nesting, roosting, foraging habitat rather than movement and dispersal. Impacts to this CHU will be a larger concern than for other CHUs.*

BLM Response: During the development of the Jumping Bean Ecological Forestry project, considerable efforts were made to situate treatment units in locations that would have minimal effects to northern spotted owls. All known and historic owl sites are contained within the LSEAs that are situated across the Planning Area. The units proposed for harvest are placed in landscape positions that are expected to provide lower

quality habitat value for spotted owls (ridge tops and upper slopes) through time, or are strategic in terms of fire hazard risk reduction. The areas selected for harvest are generally homogenous in terms of species composition and vertical structure, and the proposed treatments are expected to have long term beneficial effects by reducing fuel loads and overstory tree competition, thereby reducing the risk of high-severity fire occurring in these treated areas (Gains et al, 2010), and increasing growth and vigor of the trees remaining within the treated areas (Roberts and Harrington, 2008). See Section 1.2 for further details regarding the application of LSEAs and 3.7.2 of the EA for further details regarding the anticipated effects to owls from this project. In April 2013, the BLM received a Biological Opinion for the Jumping Bean Ecological Forestry project.

(22) Comment: The commenter quotes the Grave Creek Watershed Analysis (1999) which states the removal of timber has the greatest direct loss and fragmentation of late-successional habitat.

BLM Response: The context of the above statement is referring to clear-cutting activities. As the next sentence in the Watershed Analysis states, "Extensive clear-cut timber harvesting has resulted in a watershed which has highly fragmented patches of late-successional habitat." The Jumping Bean Ecological Forestry Project does not propose any clear-cutting. In addition, since that time, restoration treatments were implemented that were designed to reduce erosion, sediment, and cumulative impacts within these watersheds (Joe-Louse EA, 2006).

(23) Comment: The commenter quotes the Jumpoff Joe Watershed Analysis (1998) which states, "[m]ost federally-managed stands are in the 5-20 inch diameter range. Many of these stands are the result of past timber harvest and are structurally simplistic in comparison to natural stands. Remaining stands of late-successional habitat are extremely important due to their dramatic decline from historic levels and fragmented nature."

BLM Response: Appendix 3 of the EA notes that the mature Douglas-fir stands present are overstocked. The proposed silvicultural prescription would help these mature stands to continue to develop. Trees greater than 150 years of age are not prescribed for removal for this project. Additionally, Recovery Action (RA) 32 habitat was deferred from this project. There are no proposed treatments in structurally complex stands per the interagency survey guidance (USDA/USDI 2010). The intent of RA 32 is to maintain substantially all of the older and more structurally complex multi-layered conifer forests on federal lands in order not to further exacerbate the competitive interactions between spotted owls and barred owls.

(24) Comment: The pacific fisher, northern spotted owl, long-legged myotis, fringed myotis, Yuma myotis (all bats), western bluebird, pileated woodpecker and del norte salamander may all be affected by reduction of forest stand structure, canopy closure and/or snag density in planning area. Please address and disclose the cumulative impacts of your activities on these species.

BLM Response: The long-legged myotis, Yuma myotis, western bluebird, pileated woodpecker, and del norte salamander have no species management status. Appendix 1

and/or Appendix 8 of the EA analyzes the effects of the Proposed Action on the pacific fisher, northern spotted owl, fringed myotis, Lewis' woodpecker, and the black salamander. The Jumping Bean Ecological Forestry Project Planning Area contains a wide range of habitat to support these species.

This project would not affect these localized populations to persist and the EA is consistent with the management direction of the Northwest Forest Plan and Medford RMP.

Section 3.7 of the EA contains further analysis regarding the northern spotted owl including cumulative effects analysis.

(25) Comment: The commenter askes: What is the current condition of the nearby LSRs? Are they functioning? What is the status of connectivity in the matrix?

BLM Response: The Jumping Bean Ecological Forestry Project does not propose any activities in Late Successional Reserves. The Proposed Action maintains the current connectivity in Matrix lands within the Planning Area.

Recovery Action (RA) 32 habitat is deferred from this project. There are no proposed treatments in structurally complex stands per the interagency survey guidance (USDA/USDI 2010). These areas will contribute to connectivity in Matrix lands.

(26) Comment: The commenter requests the EA to analyze the potential impacts of conifer thinning operations and brush removal on neotropical bird population trends.

"The cumulative effects analysis on migratory birds should not rely exclusively on Wilderness, Riparian Reserves and LSRs to provide for species viability into the future, because many Forest Service and BLM Districts are actively logging those land use allocations, regardless of the effects on migratory birds, despite their reserve status. We refer you to the Biscuit fire salvage timber sale as one (very large) example.

Simply concluding that the scale of the project is small, relative to the size of the nation, hence migratory bird populations will not be affected, will not suffice. As you know, the Spotted Owl was driven into threatened status by lots of "little clearcuts" that individually were insignificant, but cumulatively resulted in extensive habitat loss."

The commenter states DOI BLM instruction memo 2008-50 directs the BLM to "include migratory bird species of concern in the affect environment [analysis] when any of these species may be affected by the proposed actions…" Further, the agency must "emphasize avoidance or minimizing negative impacts and restoring and enhancing habitat quality…"

BLM Response: BLM has issued interim guidance for meeting BLM's responsibilities under the Migratory Bird Treaty Act and Executive Order (EO) 13186. Both the Act and the EO promote the conservation of migratory bird populations. The interim guidance was transmitted through BLM Instruction Memorandum (IM) No. 2008-050. The IM relies on two lists prepared by the U.S. Fish and Wildlife Service (USFWS) in determining which species are to receive special attention in land management activities;

the lists are *Bird Species of Conservation Concern* (BCC) found in various Bird Conservation Regions and *Game Birds Below Desired Condition* (GBBDC).

In December, 2008, the USFWS Service released The Birds of Conservation Concern 2008. This publication identifies species, subspecies, and populations of migratory and non-migratory birds in need of additional conservation actions, updating the April 2008 Birds of Conservation Concern List. Medford District BLM biologists conferred with local bird groups and knowledgeable individuals to identify which birds on the list in our region (Bird Conservation Region 5, USFWS Region 1) are present within Medford District BLM lands. Appendix 7 of the EA, has Table 26 which displays a list of the Migratory Birds of Conservation Concern (BOCC) and Game Birds below Desired Condition (GBBDC) in the Grants Pass Resource Area that are known or likely to be present in the Jumping Bean Ecological Forestry Project Planning Area and could be affected by the Proposed Action.

Partners in Flight support the eco-regional scale, as appropriate, for analyzing bird populations (http://www.partnersinflight.org/description.cfm). The potential failure or loss of some nests would not be measurable at the regional scale because of the small scope of the project in relationship to the regional scale. Therefore, under the Proposed Action, populations in the region would be unaffected. See Appendix 7 for further analysis of the effects of the proposed action on neotropical birds.

(27) Comment: Del Norte salamanders' have been documented in the western portion of the Grave Creek Watershed. The exact limit of their distribution is uncertain. Large areas of young stands and non-forested lands in the central part of the Grave Creek Watershed may be a significant red tree vole dispersal barrier.

BLM Response: There are no known sites East of I-5 for the del norte salamander. While the Planning Area extends west of I-5, there are no proposed treatments west of I-5; therefore, there are no potential impacts to this species. Del Norte salamanders are not listed as Sensitive or Strategic species in Final State Director's Special Status Species List (BLM 2008b) or USFWS Birds of Conservation Concern for BCR 5 (USFWS 2002).

(28) Comment: The Grave Creek Watershed is on the edge of known goshawk distribution. KS Wild requests protocol field surveys to be conducted and project impacts to be disclosed in the EA.

BLM Response: Goshawks are not listed as Sensitive or Strategic species in Final State Director's Special Status Species List (BLM 2008b) or USFWS Birds of Conservation Concern for BCR 5 (USFWS 2002). There are no known sites within the Proposed Activity Area. Goshawks have been observed in the Planning Area and are likely to forage in proposed units. Light to moderate thinning would not reduce habitat suitability or would slightly improve openness for foraging. There is sufficient mix of seral stages including large trees in the Planning Area, and reserved, deferred or withdrawn habitat within Matrix to provide nesting, fledging, and foraging habitat. Viability rating would remain high and unchanged. (USDA/USDI 1994a 3&4 p.179).

(29) Comment: Decommissioning roads in elk management areas. Conduct a detailed late-successional habitat assessment from a conservation biology perspective for the Grave Creek Watershed: patch size analysis, corridor design, gap analysis, etc.

BLM Response: There are no proposed activities within the Grave Creek Watershed, beyond hauling on existing roads. There are no Medford District 1995 Elk Management Areas in this project.

Off-Highway Vehicles (OHV) and Illegal Trash Dumps

- *Minimize illegal dumping, firewood cutting, and occupancy by enforcing rules and regulations, increasing visible presence in the area and educating the public about the protection of resources. Cleanup and close dump sites. Close any dead-end natural surface roads.*

(30) Comment: Field visits to the Planning Area show severe cumulative impacts from OHV and trash dumping. The commenter states the BLM fails to close/maintain gates for seasonal road closures. States thinning activities may open areas to more OHV use through road construction, yarding corridors, and landing construction. More OHV use results in more trash dumping and impacts on riparian values and aquatic function, which may prevent the BLM from meeting its Clean Water Act requirements.

BLM Response: There are specific Project Design Features (PFDs) (Section 2.3.2.9) to minimize increased use of OHVs, such as pulling vegetation over skid trails and blocking skid trails so they are un-usable.

The BLM requests funding through appropriated funds, grants, Secure Rurals School Act Title II funds, and other funding opportunities to clean up illegal dump sites on BLM managed lands. As unidentified containers (hazmat material) and/or other household trash/vehicles continue to be discarded on public and private lands and funding levels decline, staying on top of this problem will continue to be a challenge. To keep public lands clean, it is vital the public and BLM work together. In the summer of 2012, the BLM and the Josephine County Stewardship Group worked with the community of Illinois Valley to clean up illegal trash dumping on BLM managed land. Local community involvement in identifying problem areas and reporting suspicious activities to BLM law enforcement is very valuable. In conjunction with the BLM, Clean Forest Project (a non-profit organization in Grants Pass) has also removed 680,000 pounds of illegally dumped trash, including hazardous waste, on public lands with the help of many volunteers.

(31) Comment Comment Rural Interface (RIA)

- *Rural neighbors to BLM noted concerns from previous management activities: logging noise, visual resource impacts, potential impacts on private water sources and dust from logging haul.*
- *Reduce safety hazards, fire risks, and vandalism when managing in the RIA and the trend has been to do the same for adjacent residences not specifically classified as RIA.*

BLM Response: The EA analyzes the anticipated impacts to the Rural Interface in Appendix 1 and to visual resources in Appendix 1 and 9. Regarding dust abatement, the EA states, "Water or approved road surface stabilizers/dust control additives would be applied as necessary where haul roads are located near residences and where needed to reduce surfacing material loss and buildup of fine sediment that can enter into wetlands, floodplains and waters of the state. Road surface stabilizers/dust control additives would be prevented from entry of into waters of the state during application," (Section 2.3.2.2).

The project would meet the visual management guidelines of the Medford District RMP as field review determined the specific unit prescriptions would result in low levels of change to the characteristic landscape and would not attract the attention of the casual observer. The prescriptions for these units have been developed to repeat the basic elements of form, line, color, texture, and scale found in the predominant natural features of the characteristic landscape.

Regarding protection of private water sources, Appendix 1 states, "Water sources with legal water rights have been located and assessed to ensure impacts from vegetation harvest would not result in reduced ground water in springs where domestic water is obtained." The project has been designed to protect water sources, see PDFs Section 2.3.2.4.

Regarding the concern for fire risks, Section 3.2.3.2 states Variable Density Thinning treatments would reduce the potential fire behavior following activity slash treatments, which would move units from a slash fuel model into a timber litter model. This Section also notes that Density Management would key structural elements (e.g., large trees, snags, coarse woody debris, hardwoods, higher canopy cover) while reducing overly dense stands and protecting habitat from stand replacing fire. Activity slash treatments would occur 1-2 years after vegetation cutting.

Recreation

(32) Comment

- *Consider effects of harvesting to recreationists and others that enjoy older stands.*

BLM Response: Appendix 1 and 9 of the EA evaluate the potential impacts to recreation and visual resources.

Monitoring

(33) Comment Monitoring

- *Use Northwest Forest Plan adaptive management process to monitor harvest effects.*

BLM Response: The BLM has been practicing active forest management in Western Oregon O&C Lands for decades. Effects of harvests are known and are not unique or uncertain.

NEPA

(34) Comment: A proper consideration of the cumulative impacts of a project requires "some quantified or detailed information;…[g]eneral statements about some possible effects and some risk do not constitute a hard look absent a justification regarding why more definitive information could not be provided." Neighbors of Cuddy Mountain v. United States Forest Serv., 137 F3d 1372, 1379-80 (9th Cir. 1998)). The analysis "must be more than perfunctory; it must provide a useful analysis of the cumulative impacts of past, present and future projects." *Id*.

Commenter notes specifically for these topics: timber sale activities, road construction, fire suppression, and OHV.

BLM Response: Cumulative effects are analyzed and disclosed in Chapter 3 of the Environmental Assessment.

(35) Comment: The purpose and need for this proposal is entirely outside of the management guidelines that the BLM is legally required to follow (ie. Medford District RMP, the Northwest Forest Plan and the WOPR). Nowhere in the scoping notice does BLM reference these plans.

BLM Response: Two scoping letters were released for the Jumping Bean project. The first in February 2012 which included the proposal. Another scoping letter was released in September 2012 following the Secretary of the Interior's direction to incorporate Ecological Forestry principles which states in the first paragraph, "The Jumping Bean Project is being designed to meet the Bureau of Land Management's obligation to implement the Medford Resource Management Plan (RMP) and to address the primary needs identified for lands in the Planning Area. The project's primary objective is to implement forest management activities that would contribute to continuous timber production while restoring dry forest characteristics and reducing wildfire danger."

36) Comment: We would like the BLM to address why it is implementing these treatments to meet objectives inconsistent with their management plans.
All of the objectives listed for the Jumping Bean Junction Project are consistent with the Medford District's RMP. Management Actions/Direction in Matrix General Forest Management Area describes as management objective under this plan (p.39) to "Provide for important ecological functions such as dispersal of organisms, carryover of some species from one stand to the next, and maintenance of ecologically valuable structural components such as down logs, snags, and large trees. Provide early-successional habitat." There are several silvicultural prescriptions listed in the RMP that would create heterogeneity in the Matrix land use allocation, including early successional habitat in the form of gap creation. Reducing the fire hazard is also clearly stated as a management objective under this plan (p. 62), "Treatments are intended to restore the ability of stands to respond to other management and to reduce the risk of mortality from insects, disease, and wildfire. Treatments will consist of thinning of stands…reduction of understory vegetation, reduction of fuel ladders, and restoration of more stable plant communities." This forest restoration prescriptions proposed for this project will help future stands better meet RMP objectives by reducing stand density to increase long term tree growth,

quality, and vigor of the remaining trees and increase resistance of landscape to fire, drought, and insects. Creating a diversified stand structure (height, age, and diameter classes) will also help in meeting these objects as variability assists in survivability of a stand.

(37): Comment: We would like the BLM to look for opportunities to pursue regeneration harvests in addition to thinning to meet the objectives of "creating early seral habitat" and "creating a sustainable supply of timber products." Other BLM districts are currently proposing regeneration harvest on suitable stands we would like to see the Medford District follow this lead.

Response: 60% of the BLM ownership in the planning area are proposed within Northern spotted owl critical habitat, of which the BLM by Endangered Species Act is also required to manage for (EA, p. 112).

(38) Comment: Does the BLM plan to treat riparian reserves on this project?

BLM Response: Yes. There are 72 acres of riparian treatment included in the proposed action.

(39) Comment: We would like to see all timber sales be economically viable.

BLM Response: The proposed units in the Jumping Bean activity area are strategically planned to offer an economically viable timber sale.

APPENDIX 3 - SILVICULTURE PRESCRIPTION

Jumping Bean Ecological Forestry Project

Introduction

The Jumping Bean Project proposes Variable Density Thinning, Density Management/Hazardous Fuels Reduction, and Hazardous Fuels Reduction within the Jumpoff Joe Creek and Grants Pass-Rogue fifth-field watersheds. Stands in this Planning Area can be classified as mixed conifer and fall into both the Douglas-fir and ponderosa pine plant series. The landscape is generally classified as dry forest.

Land Use Allocation Objectives:

Lands proposed for treatment within the Project Area are allocated to Matrix and Riparian Reserves.

Matrix Lands (RMP p.38):

- Produce a sustainable supply of timber and other forest commodities to provide jobs and contribute to community stability.
- Provide connectivity between Late-Successional Reserves.
- Provide habitat for a variety of organisms associated with both late-successional and younger forests.
- Provide for important ecological functions such as dispersal of organisms, carryover of some species from one stand to the next, and maintenance of ecologically valuable structural components such as down logs, snags, and large trees.
- Provide early-successional habitat.

Riparian Reserves (RRs)(RMP p. 26):

- Aquatic Conservation Strategy objectives (RMP p. 22-23)
- Provide habitat for terrestrial species associated with late-successional forest habitat.
- Provide dispersal habitat for the northern spotted owl.
- Implement strategies to achieve the goals established in the BLM's Riparian Wetland Initiative for the 1990s.

Current conditions

The Jumping Bean Ecological Forestry project is located within the Eastern 2/3's of the Jumpoff Joe 5th field watershed. The Grants Pass-Rogue Watershed (BLM 1998a) is also present in the planning area and is characterized with near identical attributes as the Jumpoff Joe Watershed (BLM 1998b). Throughout this section the two are described together when describing conditions from the Jumpoff Joe watershed. The Jumpoff Joe watershed is dominated by mixed conifer and mixed conifer/hardwood forests. The watershed is characterized by high fire frequencies both historically and to a lesser extent in the present. Fire exclusion has resulted in significant increases in densities (more stems

per acre), shifts in species composition (*e.g.*, increases in fire intolerant, shade tolerant species) and changes in stand structure. This has caused much of the unmanaged landscape to exhibit homogenous forest dominated by Douglas-fir. These transformations have made the forests more susceptible to large, high-severity fires and to epidemic attack by insects and disease (p. 9 of BLM, 1998a). The Jumpoff Joe watershed contains at least six plant series: white oak, Ponderosa pine, Douglas-fir, Jeffrey pine, white fir, and western hemlock (Atzet and Wheeler 1984).

A landscape assessment was done early in the project planning process to determine current stand conditions, stand trajectories, and to identify threats, such as fires and insects. Stands were defined using the forest operational inventory boundaries. Boundary changes were delineated on aerial photographs, and then transferred to GIS ArcMap when field review was complete. Field reviews consisted of defining stand layers, determining trees per acre for each layer, average stand basal area/acre, average age, age of each layer, plant series, plant association group, vegetation condition, and stand structure type. Numerical data was gathered in the field. The Activity Area has exceeded stocking levels that have caused mortality or loss of tree vigor (reduced radial growth and live crown ratios) and a decline in species diversity.

The average diameter growth of 248 conifer core samples in the proposed Planning Area is 1.14 inches per decade indicating widespread growth stagnation. Plant ecologist Fred Hall (2007) writes that diameter growth of 1.0 inches per decade indicates highly significant intertree competition than does 3.0 inches per decade. Furthermore, 73% of sample trees are growing less than 1.5 inches in diameter per decade. At least 1.5 inches of tree diameter growth per decade is required to decrease the risk of bark beetle attack (USDA 1998) and is the threshold for inter-tree competition for ponderosa pine (Cochran 1992). The current growth rate of ponderosa pine is producing 0.76 inches per decade while Douglas-fir is growing 1.16 inches per decade signifying that both species are under relatively heavy competition. Mature Douglas-fir, sugar pine and ponderosa pine have been dying as a result of scarcity in the growth factors necessary for survival. Ladder fuels are creating conditions for crown fires to occur that could result in large, stand replacing conflagrations.

Generally, Douglas-fir sites are in the advanced reproduction (poles) to mid seral stages. Overstory diameters on these sites range from 8-50 inches dbh, while averages remain mostly in the lower half of this range. There are few mature Douglas-fir stands, most of which are overstocked. In mature Douglas-fir sites, overstory trees can range from 15 to 60 inches dbh. Ponderosa pine, sugar pine, and incense cedar are the main secondary species. Vigor of the overstory is variable ranging from many full crowned to a few thinning crowns or dead tops. Understory stocking is variable.

The predominate hardwood species are Pacific madrone and canyon live oak, tanoak, scattered big leaf maple, dogwood, willow, Prunus species, California black oak and, to the least extent, Oregon ash and white oak. Generally, hardwoods, particularly madrone, are overstocked. Madrone have occupied previously stocked conifer sites where they are limiting growth of important species such as ponderosa pine, California black oak, Douglas-fir, sugar pine, white oak, and incense cedar, in order of competition effect. Shrub species, in addition to sprouting hardwoods, include deerbrush, buckbrush,

Rubus species, hazel, manzanita, poison oak, ocean spray, whipple vine, hairy honeysuckle, sword fern and bracken fern.

Desired Condition

Project description

The Jumping Bean Ecological Forestry Project utilizes ecological forestry principles of forest restoration (Johnson and Franklin, 2009) tailored to southwestern Oregon forests and local conditions. The Forest Restoration Principles strategy applies the principles of ecological forestry to achieve healthy and sustainable natural systems. The strategy aims to restore, maintain, or enhance the compositional, structural, and functional ecological processes and components in the ecosystem across both spatial and temporal scales. The desired future condition is to maintain a sustainable system that is fire resilient and provides a sustainable production of natural resources (BLM 1995). The restoration strategy incorporates active management without compromising occupancy, reproduction, and survival of known northern spotted owl sites in the Activity Area. The Relative Habitat Suitability (MaxEnt) model described in the *2011 Revised Recovery Plan for the Northern Spotted Owl* (USFWS 2011), a Fire Probability model layer, and the Medford District known owl site layer were used to strategically place units to reduce effects to spotted owl sites.

Restoration Objectives:

- Reduce tree mortality and restore the vigor, resiliency, and stability of forest stands that are necessary to meet land use allocations objectives (BLM 1995 p.62).
- Utilize ecological forestry principles and plant communities to restore characteristic structure and composition, ecological conditions, and ecosystem functions.
- Shift composition toward more fire and drought tolerant species (ponderosa pine, sugar pine, incense cedar) and away from less fire and drought tolerant species such as white fir.
- Reduce stand density and ladder fuels to increase long term tree growth, quality, and vigor of the remaining trees and increase resistance and resilience of forest stands and landscape to wildfire, insects, and drought.
- Create diversified stand structure (height, age, and diameter classes) to enhance and accelerate development of structural complexity and composition (which is the result of variability).
- Restore characteristic levels of ground fuels and understory vegetation, using prescribed fire where possible.

Silvicultural actions utilize Variable Density Thinning to reduce stand basal area to desirable target levels of retention. Retention criteria are determined by plant series, stand condition, structure, and species composition. Desirable conifers and hardwoods would be promoted as leave trees (ponderosa pine, incense cedar, sugar pine, Douglas-fir of variable genotypes, old trees, oak trees 10 inches dbh and larger, and madrone trees 16 inches dbh and larger with full live crown ratios of 30 percent or greater). Individual trees greater than 150 years old would be retained in all prescriptions. The survivability of these older trees (>150) would be improved by eliminating ground and ladder fuels

and competing trees from within 1-2 times the dripline of the tree crown. Where many old trees are present, treated areas may overlap.

The treatments are designed to remove mostly small and medium sized trees, but can include removal of some large younger trees. An additional aim of treatment is to maintain or improve the proportion of fire resilient early seral tree species and stimulate their proliferation. Prescriptions would be modified where needed to retain additional canopy cover in treat and maintain units within the home range of known owl sites.

An identified desired condition is to restore and enhance species diversity on both the landscape and stand level scale include increasing the proportion of ponderosa pine, oak species (excluding tanoak), and early seral shrubs while reducing white fir and Douglas-fir. Early seral vegetation resulted from more frequent historical fire disturbances that silvicultural manipulation aims to mimic. Disturbance regimes, such as fire served to thin forests and keep stand and landscape densities low which provided vigorous growing conditions of individual trees and maintained fire resiliency across the landscape. Forest restoration thinning activities proposed in the Jumping Bean Ecological Forestry Project mimic the natural function of fires by thinning to reduce stand densities and contributing to a fire resilient landscape. Activities seek to provide a sustainable production of natural resources into the future.

A minimum of 120 linear ft of logs per acre greater than or equal to 16 inches in diameter and 16 ft long in decay classes 1and 2 are directed to be left under the Resource Management Plan General Forest Management Area Management Action/Direction (BLM 1995 p.39) for coarse woody debris (CWD). Unit 19-11 is the only stand that provides this level of CWD. The remaining units would therefore require merchantable material to make up the deficit.

Recommended Treatments

Alternative 2: Forest Restoration Strategy

This restoration strategy incorporates the development of multiple seral stages and ages within the Planning Area. The Medford District Resource Management Plan (1995) specifies that forests be managed toward a variety of structures, stands containing trees of varying age and size, and stands with an assortment of canopy configurations. Over time, manage for a balance of seral stages.

Variable Density Thinning

Units 1-2, 4-3, 4-4, 8-2, 9-2, 9-14, 9-15, 9-16, 15-13, 15-15, 17-4, 19-11, 20-2, 20-13, 21-10, 21-11, 21-13, 21-15, 21S-2, 23-4, 25-17, 29-11, 30-4, 31-1A, 31-1B, 33-10, and 33-10A

The overall objective of the Variable Density Thinning (VDT) prescription is to retain overall stand basal area to within a range based on plant association and site productivity. Relative Density (RD) targets would aim for 0.35 RD in the Douglas-fir series and 0.25 RD in the pine series. In treatment areas with Quadratic mean diameter (QM)D >16 inches dbh that aim to maintain NRF habitat, basal areas would range from 150-240

ft^2/acre. Basal area ranges would fluctuate within this range depending on the McKelvey rating designated for the site. Generally, basal area reductions would not exceed 20% in areas that aim to maintain northern spotted owl nesting, roosting, and foraging (NRF) habitat. In limited habitat types in the ponderosa pine plant series and in the dry associations of the Douglas-fir plant series, downgrades of northern spotted owl nesting, roosting, and foraging (NRF) habitat may occur. These limited treatments would occur to benefit the dry forest restoration goals that encompass the overall objective of the project. Outside of treat and maintain NRF habitat areas 80-120 ft^2 conifer basal area per acre would be retained at the stand level (some sites may require slightly lower or higher retention based on ecological site condition and productivity e.g., 60 or 140 sq. ft.). Except in areas where treatments are designed to maintain NRF habitat, dry ridges and southwesterly aspects in the Douglas-fir plant association, especially where manzanita is found, trees would be thinned to retain no more than 80 ft^2 basal area per acre while promoting ponderosa pine, incense cedar, sugar pine, and Douglas-fir, respectively. Likewise, ridgelines in the ponderosa pine series would require lower levels of retention and reduced to 60 ft^2 basal area, except in areas designed to maintain NRF habitat.

Approximately ±10-15% of the stand would be retained in untreated pockets (i.e. “skips”) to provide habitat diversity, hiding cover, structural diversity, and reduce visual sighting distances. Untreated skips would incorporate part or whole stand features such as, but not limited to old growth patches, plant buffers, RA-32 sites, tree clusters, seeps, springs, red tree vole buffers, coarse woody debris concentrations, riparian reserves, archeological sites, hardwood groves, cliff areas, rocky talus sites, and/or other ecologically significant features.

Conversely, approximately ±10-15% of the stand would be thinned more heavily to create small forest openings (i.e. “gaps”). Generally, gaps would be designed, but are not limited to protect and promote large legacy fire resilient tree species including prominent large hardwoods and to stimulate regeneration of fire and drought tolerant tree species in the understory. Gaps may be utilized to restore deteriorating stand condition, disease, or other factors that threaten the integrity of the stand. Gaps may also be utilized in pine sites or where stand conditions and site characteristics require lower levels of canopy cover as well asto provide structural heterogeneity to create additional layering into the stand structure. Gaps would enhance structural complexity and break up fuel continuity. For these reasons, gaps may require some madrone (<16 inches DBH), but not oak species, to be extracted. Oaks provide an ecological value desired in restoring dry forests of southwestern Oregon and would be retained on all sites.

Johnson and Franklin (2009) recommend 2 acre gap size as the maximum gap size. However, the majority of gaps would range from 0.25 to 0.5 acres in size size due to the majority of units under the classification as Critical Habitat Unit (CHU) for the northern spotted owl as discussed in Section 3.7.1. Active management is allowed within the framework of CHU as discussed in Section 3.7.2.5 and 3.7.2.6. In addition, gap sizes would not exceed 1 acre in size and the application 1 acre gaps would be limited by site condition and ecological objective. Any gaps created in NRF habitat would not exceed 0.75 acres in size. Gap size and shape would be positioned to benefit establishment of early seral species. Gap edges would be separated by at least 150 ft. Low density

planting of fire resilient, early seral, or drought tolerant species may occur within gaps to increase species and structural diversity.

The proposed gaps, would follow Johnson and Franklin's (2009) Dry Forest Restoration principles, by not removing all vegetation, but retaining at least 1-2 large trees. Generally, the canopy cover would be 30-40 percent; however, the prescription would be modified to retain additional canopy cover in dispersal and NRF habitat. The amount, size, and distribution of gaps would be limited in NRF and dispersal habitat to ensure habitat function is retained. Understory slashing may occur in these units on a case-by-case determination.

Douglas-fir Series

Units 1-2, 4-3, 4-4, 8-2, 9-2, 9-14, 9-15, 9-16, 15-13, 15-15, 17-4, 20-13, 21-10, 21-11, 21-13, 21-15, 21S-2, 23-4, 25-17, 29-11, 31-1A, 31-1B, 33-10, and 33-10A
These 24 units are considered dry forest types. Plant Association Groups include PSME-QUCH2/RHDI6, PSME-PIPO/RHDI6, PSME-ABCO and PSME-ABCO/SYMO. Douglas fir is the predominant conifer species with ponderosa pine, sugar pine, and incense cedar often present. These species can be found in all stand layers although the latter three are far less frequent in the middle layer. White fir appears in lesser amounts and is confined entirely to the understory. Large Douglas-fir tends to grow into these sites under optimal conditions for rapid proliferation. However, the sites cannot sustain the moisture and resource demands that large Douglas-fir require and they subsequently die off.

Ponderosa Pine Series

Units 30-4, 19-11, and 20-2
Whiteleaf Manzanita and Oregon white oak commonly occur. Large ponderosa pine trees are present and Douglas-fir mortality is widespread throughout these stands. Basal area retention would be lower on these sites since units of the pine series require lower levels (BLM 1995).

Density Management/Hazardous Fuels Reduction

Units 13-12, 14-1, 14-2, 14-4, 15-6, 15-11, 15-13A, 15-24, 21N-1, 21-3, 21-12, 22-1, 22-3, 23-1, 23-9, 28-11, and 28-17
These are units with a generally predominant pole size component mostly in the stem exclusion stage of forest development. Many also exhibit a dense understory and/or hardwood composition. These treatments involve commercial thinning activities with skips and gaps as well as understory reduction to vegetation described in *Hazardous Fuels Reduction* below. This prescription treats the entire stand (excluding skips) to reduce densities throughout. The Silvicultural Design and *VDT* prescriptions, as outlined above, would be utilized. However, fewer older trees exist in these units which implies the potential for fewer gaps and a retention guideline using basal area as specified for Douglas-fir or ponderosa pine plant series. Generally, the canopy cover would be 35-50 percent; however, the prescription would be modified to retain additional canopy cover in dispersal and NRF habitat.

These stands exhibit less square feet of basal area per acre than *VDT* stands. They contain a need for understory treatment, although they vary in condition and need. The units in this prescription have overstory components that are configured in clumps and not consistent throughout the stand. These stands are either in the poles or mid seral stage.

This treatment reduces stocking levels throughout the stand. The aim is to promote growth and structural development of residual trees by reducing stand densities. In general, the treatment includes commercial extraction and is generally used together with *Hazardous Fuels Reduction*. This treatment aims to reduce stand densities to achieve a relative density of from 0.25 to 0.45 without compromising owl habitat. Basal areas would range between 60 and 200 sq. ft/ac according to density requirements to treat and maintain dispersal and NRF habitat.

Biomass Removal

Biomass is any dead or living vegetation in a fuels unit that is ≤ 8 inches dbh for conifers and ≤ 12 inches dbh for hardwoods. For slopes < 35 percent, mechanized low ground pressure machinery would cut, skid, haul or chip biomass. On slopes > 35 percent, biomass would be cable yarded.

Hazardous Fuels Reduction

<u>Units 1-2A, 1-2B, 8-3, 13-3, 14-3, 14-5, 14-7, 14-8, 14-8A, 14-9, 14-10, 15N-15, 15-13B, 15-15A, 15-22, 15-24A, 15-24B, 17-4A, 20-1, 20-10, 20-10A, 21N-1A, 21N-2, 21S-1, 21S-4, 23-1A, 23-4A, 23-10, 23-11, 25-7, 27-3, 27-4, 33N-11, 33S-11, 33-1, 33-6, 33-10B, 33-14, 33-15, and 35-23</u>

These areas exhibit a fuel loading that have been determined to be hazardous to resource objectives and control in suppression in the event of a wildfire. Densities can be as high as 10,000 understory trees per acre, oftentimes higher in clumps.

Selective Slashing

Understory vegetation density would be reduced by cutting and spacing of conifers <8 inches dbh and hardwoods <12 inches dbh. Retained vegetation would be spaced 14-45 ft apart. Approximately 10-15 percent of the project area would be left untreated.

Hand Piling and Burning

Typically used when underburning is not possible due to heavy fuel loads. All slash less than 7 inches diameter and longer than 2 ft would be piled by hand.

Understory Burning (underburning)

Used where the objective is to maintain ≥80 percent of the overstory. Typically, burning occurs between fall and spring outside of project design criteria.

Riparian Reserve Thinning

Units 13-12, 14-1, 14-2, 15-11, 19-11, 20-13, 21-3, 28-17, 29-11, 31-1A, 31-1B, 4-4, 8-2, 9-14, 9-15, 21-12, 21-13, 21-15, 22-1, 22-3, 28-11
These stands exhibit elevated densities in riparian zones while still classifying as dry forest conditions. Species composition are similar to *VDT* and *DM* areas with Douglas-fir, madrone, California black oak, sugar pine, ponderosa pine, white fir (exclusively in the understory), bigleaf maple, and some with canyon live oak present (in the driest or rockiest areas).

Ecological Protection Zones (EPZs) are no treatment buffers within Riparian Reserves to protect the function of riparian zones. EPZs are applied to *VDT* (excluding gaps) *and DM/HFR* units where Riparian Reserves would benefit from thinning. A minimum crown closure of 50% would be maintained in the Riparian Reserve outside of EPZ boundaries. By applying EPZ boundaries, restoration treatments would be accomplished that would benefit the ecological functions and processes of the stand while promoting riparian function.

APPENDIX 4 - AQUATIC CONSERVATION STRATEGY CONSISTENCY ANALYSIS

"The Aquatic Conservation Strategy was developed to restore and maintain the ecological health of watersheds and aquatic ecosystems contained within them on public lands. The strategy would protect salmon and steelhead habitat on federal lands managed by the Forest Service and Bureau of Land Management within the range of the Pacific Ocean anadromy" (1995 Medford District RMP pg. 22).

The four components of the Aquatic Conservation Strategy (ACS) are Riparian Reserves, key watersheds, watershed analysis, and watershed restoration. The ACS was designed to meet the nine objectives discussed below. This ACS consistency analysis evaluates the Jumping Bean Ecological Forestry Project on BLM land.

Analysis of the Four Components of the ACS:

1. Riparian Reserves: The proposed project is consistent with the actions and directions within Riparian Reserves as described in the Medford District RMP. The Proposed Action would result in thinning and understory treatments to promote forest health and the development of large woody debris (LWD) within Riparian Reserves outside the Ecological Protection Zone (EPZ). Thinning would be designed to expedite the development of late successional, multi-story habitat conditions and restore the species composition and structural diversity of the plant communities, needed to achieve ACS and Riparian Reserve objectives (Medford RMP, p. 22 and p. 26 respectively). Riparian Reserves within the proposed units are currently dominated by Douglas-fir and some hardwoods. Most riparian stands are lacking large wood debris, downed logs, and large tree structure. Thinning of dense Riparian Reserves would reduce competition on the retained trees for light, nutrients, water and growing space, allowing trees to develop larger canopies, display better vigor and put on diameter growth faster than if left untreated.

The project is also consistent with the Best Management Practices (BMP) within Appendix D of the 1995 Medford RMP.

2. Key Watershed: The Planning Area is not located in a Key watershed.

3. Watershed Analysis: The Grants Pass Resource Area completed the Jumpoff Joe Watershed Analysis in 1998, and the Grave Creek Watershed Analysis in 1999, and the Grants Pass-Rogue River Watershed Analysis in 1998. The proposed activity is consistent with the Watershed Analyses.

The Watershed Analyses found that management directions in the Northwest Forest Plan and the 1995 RMP including the Aquatic Conservation Strategy, Best Management Practices, and Riparian Reserve management would be adequate at protecting, maintaining and improving aquatic and riparian ecosystems. The Watershed Analyses recommended reducing road densities which are not needed for future management.

The Watershed Analyses discussed restricting road construction or considering alternatives to constructing new roads in sensitive soil areas. Permanent road construction is not proposed under the Jumping Bean Ecological Forestry Project. Many of the roads in the Planning Area are not public roads and are under reciprocal right-of-way agreements with private landowners because of the checkerboard ownership pattern. The BLM does not have the option to close these roads due to the reciprocal right-of-way agreements.

4. Watershed Restoration: Though the Jumping Bean Ecological Forestry Project is not an aquatic watershed restoration project, it would aid in the improvement of watershed health through the following proposed activities: thinning and activity fuels reduction in Riparian Reserves.

Analysis of the Jumping Bean Ecological Forestry Project for consistency with the Aquatic Conservation Strategy objectives:

The ACS gives direction to maintain and restore ecosystem health at watershed and landscape scales. For the purposes of this analysis the watershed scale will be discussed in terms of site or project scale and will be at the HUC 6 and 7 watersheds. The landscape scale will be at the HUC 5 watershed level.

Appropriate consideration of potential cumulative effects is a critical element in determining a project's consistency with the ACS. The minimal effects at the HUC 7 scale would not reach a magnitude detectable at the HUC 6 or HUC 5 scales.

1. Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations and communities are uniquely adapted.

The watershed and landscape-scale features which protect species, populations, and communities dependent on aquatic systems would be maintained and in some cases enhanced in the short term and long term. The distribution, diversity, and complexity of watershed and landscape-scale features needed for the protection of aquatic systems would be maintained. Proposed activities such as road decommissioning and riparian thinning would restore watershed features in the short and long term.

Riparian Reserves

One key component of watershed and landscape scale features needed for the protection of aquatic systems is Riparian Reserves. Riparian Reserves would be maintained at the site and watershed levels in the short and long term. Riparian vegetation treatments (thinning) would enhance riparian characteristics. Riparian thinning would result in a reduction in stand densities and would allow for the development of late successional riparian characteristics. One of these characteristics is multi-level canopy cover which helps to maintain cool water temperatures.

Late successional characteristics in riparian areas also include downed coarse woody debris and large woody debris (LWD) which increases channel complexity, and diverse species composition which provides a variety of chemical and biological inputs to

streams. Riparian thinning would also reduce the spread of disease and the risk of a high intensity or severity fire in Riparian Reserves. Such a fire could result in tree mortality and a reduction in shade, which could negatively affect fish habitat by causing an increase in water temperature, a reduction in future recruitment of LWD, an increase in soil erosion and sediment entering streams.

Roads

There are approximately 1.5 miles of temporary route construction and reconstruction, all to be decommissioned. These routes would allow for access to harvest areas in treatment units 17-4, 31-1B, 1-2, 15-5A, 25-17, 9-2A, 17-4, 9-14. This action would not lead to stream sedimentation due to the ridgetop or near ridgetop location of these roads which are hydrologically disconnected. The temporary route proposed for reconstruction to access unit 9-14 would be 0.27 miles in length and would be reconstructed over an existing drivable roadbed. This route would be located on slopes ranging from 5-20%. The intermittent stream crossed by this roadbed has interrupted flow, and has been field verified as being dry during the hauling season.

Existing road would require approximately 500 ft of reconstruction to widen a hairpin turn that is currently unsafe for haul. During reconstruction activities at least three ditch relief culverts would be installed to disperse water that is presently flowing within the existing ditchline off the road. The upper most culvert would replace and existing plugged culvert, a second culvert would be placed 75 to 100 ft below that would discharge out on an existing bench. The third culvert would be on the main road where there are signs of exiting erosion. All culverts would be installed with a rip rap splash pad at the culvert outlet to dissipate water and reduce erosion. The stream adjacent to this road work is non-fish bearing. Installation of culverts would redistribute water and reduce the current chronic erosion occurring as a result of a insufficient number of culverts and lack of road maintenance.

Project Design Features (PDFs) would be expected to minimize sediment routing to streams through restrictions on ditch blading, use of cross drains, and the use of temporary sediment control measures. A small amount of sediment may enter streams without CCH (Coho Critical Habitat, which overlaps all other listed fish habitat in the project) during log haul and existing road maintenance where roads are hydrologically connected. All sediment producing actions would result in detectable sediment inputs for no more than 25 ft downstream of the impact point (100 ft in the case of the road accessing Unit 9-14), and would all be within the State of Oregon water quality standard of no more than a 10% increase in turbidity over background levels. Sediment would not be expected to enter CCH streams as a result of haul or maintenance of haul roads, with dry condition haul, well-vegetated ditch lines, properly functioning cross drains, and existing filter strips, or sediment barriers installed, where needed, to prevent sediment delivery into CCH.

This project would not increase the number of permanent roads within these sub-watersheds, since permanent road building is not part of the proposed project. No foreseeable permanent road construction is planned on federally managed lands within this sub-watershed.

Peak Flows
The Proposed Action would not affect the timing, magnitude, duration, and spatial distribution of peak, high and low flows.

2. Maintain and restore spatial and temporal connectivity within and between watersheds. Lateral, longitudinal, and drainage network connections include floodplains, wetlands, upslope areas, headwater tributaries, and intact refugia. These network connections must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.

The spatial and temporal connectivity within and between watersheds would be maintained in the short and long term at the site and landscape scales. Chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species would be maintained.

3. Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.

The physical integrity of aquatic systems, including shorelines, banks, and bottom configurations would not be affected at the site or landscape scale in the short or long term. The proposed activities would not manipulate or affect shore lines, banks or bottom configurations.

4. Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain within the range that maintains the biological, physical, and chemical integrity of the system and benefits survival, growth, reproduction, and migration of individuals composing aquatic and riparian communities.

Water quality necessary to support healthy riparian, aquatic and wetland ecosystems would be maintained. Water quality would remain within the range that maintains biological, physical, and chemical integrity streams.

Harvesting, yarding, landing construction and rehabilitation, temporary route construction and reconstruction (including route decommissioning), existing route re-construction, road maintenance hauling, and fuel treatments would have no effect on SONCC coho salmon (ESA-Threatened) and coho critical habitat (CCH).

In the two locations where the 35-5-21 road crosses critical coho salmon habitat, sediment barriers would be installed to ensure that no sediment reaches streams. Sediment would not be expected to enter CCH as a result of haul or maintenance of haul roads, with dry condition haul, well-vegetated ditch lines, properly functioning cross drains, and existing filter strips, or sediment barriers installed, where needed, to prevent sediment delivery into CCH.

Slight increases in turbidity would occur in the short term in localized areas as a result of road activities in streams without CCH. Best Management Practices (BMPs) would be

implemented to minimize the amount and duration of sediment entering these stream channels. Such increases in turbidity would not measurably alter the biological, physical, or chemical integrity of streams. Aquatic and riparian dependent species' survival, growth, reproduction, and migration would be maintained.

5. Maintain and restore the sediment regime under which aquatic ecosystems evolved. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.

The sediment regime under which aquatic ecosystems evolved would be maintained at the site and landscape scales in the short and long terms. Some of the proposed activities such as route reconstruction and road maintenance would reduce sediment input in the short and long term. Streams within the Planning Area evolved with sediment input. Sediment input can result from natural disturbances such as landslides, slumps, wildfires, bank erosion, and channel scour.

Road Related Activities

Roads proposed for dry condition haul would result in negligible amounts of sediment entering streams without CCH because the roads are either bituminous surface treatment (BST) or crushed aggregate (rocked) or are hydrologically disconnected due to ridgetop location of timber sale units.

The roads proposed for dry condition haul could result in sediment entering stream channels without CCH, but because of PDFs the amount would be minimal. Sediment would not be expected to enter CCH as a result of haul or maintenance of haul roads, with dry condition haul, well-vegetated ditch lines, properly functioning cross drains, and existing filter strips, or sediment barriers installed, where needed, to prevent sediment delivery into CCH.

Changes in embeddedness, interstitial spaces, and pool depth would not be measurable. Road maintenance would result in a minimal amount of sediment reaching stream channels without CCH. Increased sediment levels from road maintenance would not be detectable above background levels following the first few substantial rain events, therefore sediment input would be short term. Negligible changes to stream channels without CCH from sediment input would be expected. However, changes in embeddedness, interstitial spaces, and pool depth would not be measurable. Following the first winter and thereafter sediment entering streams without CCH would decrease to the point of being negligible.

Harvest Activities

There would be 9 roadside landings utilized within the Riparian Reserves. These landings would utilize the road surface for equipment but would need to clear trees, on either side of the road, to create an open area up to 0.25 acres in size for safe operation of yarding and log loading equipment. Three of these landings would be located within the Ecological Protection Zone (EPZ) on the road surface and within turnouts. There would be no overstory shade trees removed, and no more than 5 trees total would be taken from the three sites combined. BMPs would be applied to ensure that erosion from these actions would remain onsite and would not result in stream sedimentation. Since the EPZ

is designed to filter out sediment produced during upslope activities that are implemented using BMPs, these activities would not result any sediment entering streams.

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. The timing, magnitude, duration, and spatial distribution of peak, high, and low flows must be protected.

The Jumping Bean Ecological Forestry Project would not affect the timing, magnitude, duration, and spatial distribution of peak, high and low flows. See Appendix 1: Water Resources (not including water quality) for further details.

7. Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.

The timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands would not be affected by any of the proposed activities. There are no wetlands, as defined on page 117 of the 1995 RMP, in the Planning Area.

8. Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability.

The species composition and structural diversity of plant communities in riparian areas would be maintained at the site and landscape scales in the short and long term. There are no wetlands, as defined on page 117 of the 1995 RMP, in the Planning Area. Vegetation treatments proposed for the Proposed Action were designed to enhance riparian conditions in the short and long term. Plant communities in riparian areas would be maintained and enhanced through silvicultural prescriptions and no treatment buffers in order to provide for adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and to supply amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability.

9. Maintain and restore habitat to support well-distributed populations of native plant, invertebrate and vertebrate riparian-dependent species.

Habitat for riparian-dependent plant, invertebrate and vertebrate species would be maintained at the site and landscape scales. Vegetation treatments proposed were designed to enhance riparian conditions in the short and long term. There would not be a reduction of habitat needed to support riparian dependent species in the short term or long term.

CONCLUSION:

Based on this analysis at both the site and landscape scale of the proposed activities in the Jumping Bean Ecological Forestry Project, it was determined that the actions are consistent with the nine objectives and the four components of the ACS. This determination was based on the extent of the small spatial and temporal disturbances associated with the proposed activities.

APPENDIX 5 - NOXIOUS WEEDS

Specialist Report

Jumping Bean Ecological Forestry Activity Area – Noxious Weeds – Not Affected

Units with the Jumping Bean Ecological Forestry Project Planning Area were surveyed for noxious weeds in the spring 2010 and 2011. Several sites were pulled upon discovery, and remaining sites found along roadsides were treated in 2010 and 2011. Sites documented include 5 populations of *Rubus armenicus* (Blackberry) and 5 populations of *Cytisus scoparius* (Scotch broom).

Based on these population sizes, per noxious weed reports provided by professional botany contractors, the Grants Pass botanist estimated that approximately 0.01% of the Activity Area harbors noxious weeds. The maximum square footage/acreage occupied by all noxious weed species reported in or directly adjacent to Jumping Bean Ecological Forestry Project units is approximately 0.41 acres. One of the species reported, Himalayan blackberry, is commonly found throughout this region and although small, isolated patches might be treated, it is not practical to target for priority treatment due to its predominance across the landscape.

Table 21: 2011 Plant Surveys Revealing Noxious Weed Species

Location in Township (T), Range (R), Section (S)	Species	Coverage in Sq. Yard	Oregon Department of Agriculture Designation	Plant Description / Habitat Requirements
T35S-R5W-21 T35S-R5W-33 T34S-R5W-21 T34S-R5W-21 T34S-R5W-21 T34S-R5W-20	Himalayan Blackberry	100 20 10 120 150 15	B*	Himalayan blackberry is a robust, clambering or sprawling, evergreen shrub which grows up to 9.8 feet (3 m) in height (Munz, 1974). Himalayan blackberry typically grows in open weedy sites, such as along field margins, railroad right-of-ways, roadsides, and riparian areas (Crane, 1940; Hitchcock et. al, 1973; Laymon, 1984; Roberts, 1980).
T35S-R5W-21 T35S-R5W-21 T35S-R5W-21 T35S-R5W-20 T35S-R5W-21	Scotch broom	30 50 100 100 150	B*	Scotch broom is a long-lived, brushy, early seral colonizer which does not grow well in forested areas, but invades rapidly following logging, land clearing, and burning (Mobley, 1954). Scotch broom is generally intolerant of shade and will not grow in heavily shaded places (DiTomaso, 1998; Peterson and Prasad, 1998), and is typically shaded out once native species are established (Bossard, 2000; Williams, 1983) or forest canopy closes (Sawyer et. al, 2000).
Total Sq. feet		1,981 sq. yards = 0.41 ac		

** "B" designation; a weed of economic importance which is regionally abundant but which may have limited distribution in some counties. Where implementation of a fully integrated statewide management plan is not feasible, biological control shall be the main control approach (ODA, 2011).

Over the last 150 years activities such as motor vehicle traffic, recreational use, rural and urban development, timber harvest, road construction, and natural process have introduced and transported noxious weeds into the Rogue Valley. Noxious weeds are spread by the wind and by seed via attachment to vehicles and vectors such as humans, animals, and birds, and are able to grow on suitable habitat (generally considered as any newly disturbed ground and/or an influx of light due to canopy removal).

Since the 1970s, a recognition that weeds were causing environmental damage resulted in the passage of State noxious weed laws, the Carson-Foley Act of 1968 – Plant Protection Act of 2000, and Presidential executive orders like Invasive Species E.O. 13112, which directs federal agencies to combat the noxious weeds on federal lands. Additional direction is provided by the Medford District RMP, which states the district is to "contain and/or reduce noxious weed infestations on BLM-administered land...(p. 92)," and "...survey BLM-administered land for noxious weed infestations…(p. 93)." These RMP directions for weed management are intended to be met at a landscape level; whether the direction is achieved is not intended to be measured at the site specific level nor with the implementation of each project.

Thousands of acres of weed treatments have occurred on federal (and non-federal) lands over the last decade across the Medford District with the RMP-driven objective of containing or reducing – not eradicating - noxious weed populations (Budesa, 2006). In an effort to continue to contain and/or reduce noxious weeds on federal land, the BLM proposed to treat known weed populations within the Grants Pass Resource Area. In 2012, over 750 acres of BLM land in the Grants Pass Resource Area was treated. Many roadsides in the Jumping Bean Ecological Forestry Project are scheduled for treatment in 2013.

Environmental Consequences of the Jumping Bean Ecological Forestry Project Implementation

Alternative 1 (No Action) –
Under the No Action Alternative, noxious weeds within the Planning Area would continue to spread into suitable habitat at an unknown rate. The rate at which noxious weeds spread is impossible to quantify, as it depends on a myriad of factors including, but not limited to, logging on private lands, motor vehicle traffic, recreational use, rural and urban development, and natural processes (Northwest Area Noxious Weed Control Program EIS, p. 59). The following table (22) illustrates how each of these activities affects noxious weed dispersal.

Table 22: Factors Affecting the Determination of Rate of Noxious Weed Spread

Activity	Role in Potential Noxious Weed Seed Dispersal
Private Land	Private lands host a perpetual source for noxious weed seed, which can be dispersed when seeds attach to tires, feet, fur, feathers or feces, or when natural processes such as wind and/or flooding events transport the seed from its source to another geographical vicinity.
Logging on Private Lands	Logging activity presents a key dispersal opportunity for noxious weed seeds per 1) attachment to tires/tracks of mechanized logging equipment, tires of log trucks, and various other logging-related substrates which subsequently transport the seed from its source to another geographic vicinity, 2) creation of openings for potential noxious weeds colonization and 3) a lack of PDFs – such as equipment/vehicle washing, etc. which attempt to reduce the activity's spread of noxious weed seeds.
Motor Vehicle Traffic (including Log Trucks)	Roads on public land include public use, which results in a plethora of seed-dispersing activities occurring on a daily basis. Private landowners use public roads to haul logs, undertake recreational pursuits, and/or access their properties. This transportation often occurs along BLM-administered roads, which are situated within a checkerboard ownership arrangement. How or when seed detachment occurs is a random event could take place within feet or miles from the work site/seed source, presenting a high likelihood of detachment on public lands.
Recreational Use	The public often recreates on BLM-managed public lands, and can spread seed from their residences to public land in a variety of ways such as attachment to vehicle tires, hikers' sox, shoes, or other clothing, the fur of domesticated animals, etc.
Rural and Urban Development	Rural development occurring within the checkerboard land arrangement often requires public landowners to acquire a Right-of-Way (ROW) from the BLM to legally access their parcel(s). These ROWs, or use of BLM-administered roads is often granted (Groves, 2006). Please refer to 'Motor Vehicle Traffic' and 'Private Land,' for clarification of how this affects the spread of noxious weeds from private to public lands.
Natural Processes	Wind, seasonal flooding, and migration patterns of birds/animals are a few natural processes that potentially spread noxious weeds, especially from private land to public land. Wind carries seeds, and deposits them at random intervals. High water caused by flooding reaches vegetation (often harboring a noxious weed component) growing on the banks of rivers/creeks/streams, and deposits seeds downstream.

The abovementioned activities would contribute to noxious weed spread, which could degrade some elements of the environment. To predict the rate of this degradation would be highly speculative, as the extent of weed expansion is dependent on so many factors that it is considered impossible to quantify. The degree of degradation would depend on the noxious weed species, as some, such as Scotch broom and meadow knapweed, are more intrusive than others.

Across the Grants Pass Resource Area, the more aggressive species are slated for treatment under Medford District's *Integrated Weed Management Plan and Environmental Assessment* (BLM, 1998c) under a separate project. However, the success of implementing the weed management plan would be temporary, as logging on non-federal lands, recreational use, rural and urban development, natural processes and vehicle traffic will continue to spread noxious weed populations into the Planning Area.

Indirect effects of noxious weed spread include the potential degradation of wildlife habitat (Rice et. al., 1997, Harris and Cranston 1979), a decline in natural diversity (Forcella and Harvey 1983; Tyser and Key 1988; Williams 1997), and decline in water quality (Lacey et al., 1989); however, a very small amount of Jumping Bean Ecological

Forestry Project unit acreage (less than 0.01% of unit acreage under Alt. 2) is covered by noxious weeds, making it difficult to quantify any potential decline in ecosystem health related to existing noxious weed populations, or to quantify the potential decline in ecosystem health related to any additional noxious weed populations potentially established by the activities described in Table 22.

Alternatives 2 (Proposed Action) – Direct and Indirect Effects

In the short term (approximately 1-5 years), proposed activities within the Planning Area would result in the reasonable probability of spreading noxious weeds. However, the rate at which this potential spread would occur is unknown due to the indistinguishable causal effect of other activities and factors listed in Table 22 on the spread of noxious weeds.

Openings, caused by 1,201 acres of Hazardous Fuels Reduction, 488 acres of Variable Density Thinning, 637 acres of Density Management, 0.3 miles of temporary route re-construction, and 1.2 miles of temporary route construction, would provide suitable habitat for noxious weeds to colonize. In addition, during project implementation, increased vehicle traffic could increase, or at least perpetuate, weed infestations along road systems because of seed dispersal.

Openings and disturbance provide the greatest opportunity for the establishment of noxious weeds. In an effort to address the potential for project activities to increase the rate of spread of noxious weeds, Project Design Features (PDFs) have been included in the project to decrease the potential spread of weeds associated with the Proposed Action. Project Design Features include washing equipment prior to moving it on-site and seeding and/or planting newly created openings with native vegetation to reduce the potential establishment of noxious weeds. These PDFs are widely accepted and utilized as Best Management Practices (BMPs) in noxious weed control strategies across the nation (Thompson, 2006). Table 23 delineates the project design features and their expected implementation results.

Table 23: Project Design Features and Implementation Results

Project Design Feature (PDF)	Result of Implementing PDF
Washing equipment	Removes dirt that may contain viable noxious weed seeds, thereby reducing the potential for noxious weed spread
Operating vehicles/equipment during the dry season	Reduces the potential for viable noxious weed seed to be transported and dispersed via mud caked on the undercarriages/tires/tracks of logging equipment.
Seeding and/or planting newly created openings with native seed vegetation.	Introduces native vegetation to the site prior to noxious weed seed recruitment, allowing native plants an advantageous jump-start in reestablishment, which reduces the potential for noxious weed infestation.

Implementing the PDFs that reduce the potential spread of noxious weeds associated with the Proposed Action, and using native species for seeding/planting newly disturbed openings is expected to result in a similar potential of noxious weed expansion as associated with the No Action Alternative.

In the long term (5-100 years), tree and shrub canopies would eventually expand and reduce light levels, which in turn would prevent weeds from growing and expanding within treated areas, because populations decline as the amount of light reaching the plants diminishes. Consequently, in the long term, remaining weed populations would be confined to the road prism and adjoining (private) disturbed land as canopy is re-established in treated areas over time.

The effect of implementing Alternative 2 could possibly result in the establishment of new noxious weed populations. Although the *immediate* potential for weed spread would be less with the No-Action Alternative than for the Proposed Action, the potential for the spread of existing noxious weeds and the introduction of new species is considered similar for both alternatives, because of the inclusion of PDFs in Alternative 2, and the fact that under the "No Action" Alternative, populations would continue to establish and spread due to seed transport by vehicular traffic, wildlife, and other natural dispersal methods listed in Table 22.

Indirect effects associated with noxious weed population enlargement are similar to those mentioned in the No Action Alternative, and are known to include, generally, declines in the palatability or abundance of wildlife and livestock forage (Rice et al., 1997), declines in native plant diversity (Forcella and Harvey, 1983; Tyser and Key, 1988; Williams, 1997), reductions in the aesthetic value of the landscape, encroachment upon rare plant populations and their habitats, potential reductions in soil stability and subsequent increases in erosion (Lacey et. al, 1989), and an overall decline of ecosystem health.

However, considering implementation of Alternative 2, there are three main reasons why potential weed establishment that might be caused by the Proposed Action is not expected to result in a detectable effect to overall ecosystem health. First, surveys indicate that a very small percentage – 0.01 % of acreage within the Activity Area units - are affected by noxious weeds.

Second, these sites located in units proposed for treatment have been reported during pre-disturbance surveys, and some (depending on how aggressive the species is) have already received treatment in 2011 under Medford District's *Integrated Weed Management Plan and Environmental Assessment)* (BLM, 1998c), which means that the acreage in the Planning Area affected by noxious weeds is now even closer to 0% until ongoing activities listed in Table 22 would potentially re-introduce weeds into the Planning Area.

Third, as aforementioned, Project Design Features (PDFs) have been established to minimize the rate at which project activities might potentially spread noxious weed seed from outside/adjacent sources.

<u>Alternative 2 (Proposed Action) Cumulative Effects</u>
In order to address the cumulative effects of the Proposed Action on the spread of noxious weed encroachment, the condition of non-federal lands must be considered. However, there is no available or existing data regarding noxious weed occurrence on local non-federal lands.

Therefore, for purposes of this analysis, BLM assumes that 1) there is a perpetual source of noxious/invasive weeds on non-federal lands that can spread to federal lands, especially when the land ownership is checkerboard, as within the Planning Area, and 2) conversely that noxious weeds are not established on these lands, and therefore there is a need to reduce the risk of spread of noxious weeds from the federal lands to the adjoining non-federal lands.

Seeds are spread by the wind, by animal/avian vectors, natural events, and by human activities - in particular through soil attachment to vehicles. BLM's influence over these causes of the spread of noxious weeds is limited to those caused by human activities.

Additional human disturbance and traffic would increase the potential for spreading noxious weed establishment, but regardless of human activity, spread of these weeds would continue through natural forces. Thus, the BLM cannot stop the spread of noxious weeds, it may only reduce the risk or rate of spread.

Given the unpredictable vectors for weed spread, such as the vehicle usage by private parties, wildlife behavior, and wind currents, it is not possible to quantify with any degree of confidence the rate of weed spread in the future, or even the degree by which that potential would be increased by the Proposed Action.

Foreseeable activities within the Planning Area are expected to be similar to past and current activities: motor vehicle traffic, recreational use, rural and urban development, timber harvest, road construction, and firewood collection. These types of activities could result in new disturbed sites available for colonization by existing noxious weed populations, and they do offer the possibility of introduction of new noxious weed species to the Planning Area under the Proposed Action or the No-Action Alternative.

As stated above, there is no available or existing data concerning the rate of weed spread occurring on either federal or non-federal lands as a consequence of these types of activities. Also, as discussed above, there is no information on what, if any, increase in the rate of weed spread the Proposed Action would cause, and hence, it is not possible to quantify with any degree of confidence what the incremental effect of the Proposed Action on the spread of noxious weeds would be when added to the existing rate of weed spread caused by past, present, and future actions.

PDFs exist to reduce the potential that the Proposed Action would contribute to the spread of weed seed and establishment of new populations. PDFs are not intended or expected to completely eliminate any possibility that the Proposed Action would contribute to the spread of weed seed and establishment of new populations; however, PDFs ensure that any incremental contribution of the Proposed Action to the spread of weeds, when added to the rate of weed spread caused by past, present, and future actions, would be so small as to be incapable of quantification or distinction from background levels.

As described above, PDFs for this project include washing vehicles/equipment, operating in the dry season, and seeding/planting newly created openings with native vegetation. BLM, and other federal and nonfederal organizations involved in combating noxious

weed spread, routinely utilize these PDFs in noxious weed control strategies. These PDFs are widely accepted as Best Management Practices (BMPs), as they are inexpensive to implement, easily attainable, and accomplish the objective of reducing the potential of spreading noxious weeds as a result of project-oriented activities.

Data collection would not reduce the inherent speculation in predicting incremental effects of the proposed action on the spread of weeds because of (1) the unpredictable natural factors that largely determine whether weeds would spread after project activities, (2) the unlikelihood that future data collection would be able to detect or measure any difference between background rates of weed spread and the rate of weed spread as affected by the Proposed Action and correspondingly reduced by PDFs, and (3) the included PDFs that would reduce, if not eliminate, any project effects on the rate of weed spread that would make the already undetectable effects of the Proposed Action even more undetectable.

Finally, further data collection on the rate of spread would not alter the PDF techniques already being applied to reduce that rate of spread. It cannot be over emphasized that under the "No Action" Alternative, noxious weeds are likely to spread over time regardless of whether or not the Jumping Bean Ecological Forestry Project occurs, and that rate would not be altered to any detectable degree by the Proposed Action.

APPENDIX 6 - SPECIAL STATUS PLANT SPECIES

Specialist Report

T/E Plants – Not Affected

Of the four federally listed plants on the Medford District (*Fritillaria gentneri, Limnanthes flocossa* ssp. *grandiflora, Arabis macdonaldiana,* and *Lomatium cookii),* only *Limnanthes flocossa ssp. grandiflora* does not have a range which extends into the Grants Pass Resource Area.

Final units within the Jumping Bean Ecological Forestry Project do not fall within the range of *Lomatium cookii* or *Arabis macdonaldiana,* but are within the range of *F. gentneri*, as determined by the 2004 U.S. Fish and Wildlife Service Biological Opinion. Final units were surveyed according to the Service's 2-year protocol; vascular plant surveys were conducted in the springs of 2010, 2011, and 2013, and 1 new *Fritillaria gentneri* populations were found. There would be no anticipated effect from the Proposed Action on any federally listed plant.

Bureau Special Status & Survey and Manage Plants – Not Affected

Background

On July 26, 2007 a new Special Status Species list went into effect (IM No. OR-2007-072), coupled with a new Interagency Special Status Species Policy (ISSSP). This new list has two categories, (ISSSP) Sensitive and Strategic. The former categories of Bureau Assessment and Bureau Tracking no longer exist. Sensitive species require a pre-project clearance and management to prevent them from trending toward federal listing. There is no pre-project clearance or management required for the Strategic Species at the BLM District level, thus Strategic Species will not be analyzed in this document.

In addition to the aforementioned Special Status Species policy, Survey and Manage requirements have been re-instated as of December 2009. On December 17, 2009, the U.S. District Court for the Western District of Washington issued an order in *Conservation Northwest, et al. v. Sherman, et al.*, No. 08-1067-JCC (W.D. Wash.), granting Plaintiffs' motion for partial summary judgment and finding NEPA violations in the *Final Supplemental to the 2004 Supplemental Environmental Impact Statement to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines* (USDA and USDI, June 2007). In response, parties entered into settlement negotiations in April 2010, and the Court filed approval of the resulting Settlement Agreement on July 6, 2011. Projects that are within the range of the northern spotted owl are subject to the survey and management standards and guidelines in the 2001 ROD, as modified by the 2011 Settlement Agreement.

The Jumping Bean Ecological Forestry project is consistent with the Medford District Resource Management Plan/Forest Land and Resource Management Plan as amended by the 2001 *Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines* (2001 ROD), as modified by the 2011 Settlement Agreement.

Survey Results

Approximately half of the Activity Area was surveyed for vascular and nonvascular plant surveys in the spring of 2011 and 2012. Second-year surveys for *Fritillaria gentneri* were conducted in the spring of 2011 and 2012. The remaining Activity Area have been surveyed in years ranging from 2002 to 2007, and will be re-surveyed in the spring of 2013.

Professional botanists surveyed the Activity Area using intuitive controlled methodology, wherein areas supporting high potential habitat were surveyed more intensively. (The same methodology will be applied to surveys to occur in the spring of 2013.) Surveys were also conducted in compliance with the 2001 Survey and Manage protocol, which requires surveys for Category A and C species. Survey and Manage protocol requires managing known (documented) sites of Category A, B, C, and E species, managing 'high-priority' Category D species, and no site management requirement of Category F species. Surveys pertaining to units surveyed in 2011/2012 revealed the following new sites (see Table 24); (8) *Chaenotheca ferruginea*, (1) *Camassia howellii*, (2) *Cypripedium fasciculatum*, (3*) Leptogium teretiusculum*, (1) *Fritillaria gentneri.*

In addition to surveys completed for the Jumping Bean Ecological Forestry Project, Medford District's rare plant database, GeoBOB (Oregon/Washington Geographic Biotic Observation (GeoBOB)), was referenced to locate sites found during previous surveying efforts which overlapped into final Jumping Bean Ecological Forestry Project units. Past survey results revealed the following sites which require Project Design Features; (1) *Chaenotheca ferruginea*, (1) *Chaenotheca subroscida*, (2) *Camassia howellii*, (1) *Rhizopogon truncatus*, (1) *Chlorogalum angustifolium*, (2) *Leptogium teretiusculum*, and (3) *Cypripedium fasciculatum* sites.

All sites, whether historical or resulting from the most recent surveys, have been compiled and listed in Table 24.

Table 24: Sensitive and Survey and Manage Plant sites

Species	Common Name	Sensitive	Survey & Manage Category	Number of Sites	TRS (unit)
Chaenotheca ferruginea	Needle lichen	No	B	9	34-5-20 (20-10) 34-5-33 (33-15) 34-5-23 (23-10) 35-5-1 (1-1) 35-5-8 (8-2 & 8-3) 35-5-23 (23-4) (2) 35-6-1 (1-1)
Chaenotheca subroscida	Lemondrop whiskers	No	E	1	35-5-21 (21S-2)
Cypripedium fasciculatum	Clustered lady's slipper	Yes	C	5	35-5-8 (08-001) 35-5-23 (23-1A) (2)35-5-33 (33-10) 35-6-1 (1-2)
Chlorogalum angustifolium	Narrowleaf soap plant	Yes	--	1	35-6-1 (1-1)
Leptogium teretiusculum	Shrubby vinyl lichen	No	E	5	33-5-31 (31-1B) 34-5-21 (21-N2) 34-5-33 (33-14) 35-5-23 (23-14)
Fritillaria gentneri	Gentner's fritillary	Yes – T/E	--	1	35-6-1 (1-1)
Rhizopogon truncatus	truffle	No	D	1	35-5-21 (21-10)

Recommended Plant Site Protection

Vascular species, including *Cypripedium fasciculatum*, *Chlorogalum angustifolim*, and *Camassia howellii*, would receive a protection buffer ranging from 5-100 feet in diameter, depending on site specific conditions and unit prescription(s).

Fritillaria gentneri, a federally-designated Endangered species, would receive a protection buffer ranging from 25-100 ft in diameter, and would comply with mitigation measures set forth in the 2009-2013 USFWS Programmatic Biological Assessment for Activities that May Affect the listed endangered plant species (including *Fritillaria gentneri*).

For Survey and Manage (S&M) species, S & M protocols state Category A, B, and E species are under a "manage known sites" requirement. Therefore, the Category A, B, and E species in the above table would receive a 5-100 foot buffer, depending on site specific conditions and unit prescriptions.

Category C (and D, although there are not any in the Activity Area of this project) species are a 'manage high-priority site' species. The 2001 Survey and Manage Standards and Guidelines, p 10 states that "high priority sites will be managed according to the Management Recommendation for the species," and if there aren't any

Management Recommendations for the species, then "a combination of professional judgment, Appendix 12 in the Northwest Forest Plan final SEIS, and appropriate literature will be used to guide individual site management." Most importantly, "until a Management Recommendation has been written addressing high priority sites, either assume all sites are high priority," or commence determination of high-priority sites on a case-by-case basis with the following formula:

1) Obtain guidance from the Interagency Survey and Manage Program Manager;
2) Obtain local interagency concurrence (BLM, FS, USFWS);
3) Document consideration of the condition of the species on other administrative units as identified by the Program Manager – typically adjacent units as well as others in the species range within the province; and,
4) ID in ISMS (now GeoBOB)

In the case of this EA, all Survey and Manage category C species are assumed 'high-priority,' and would be buffered to ensure species persistence at each site. As such, buffers may range from 5-100 feet, depending on site-specific conditions and unit prescription(s). Category F species are not required to receive site management, therefore *Chaenotheca furfuracea* would receive a 0-50 foot buffer.

It is important to note (with the exception of the *Fritillaria gentneri* site) that regarding the above-mentioned buffers, the actual buffer itself may be comprised of either a physical buffer made from flagging, or a virtual buffer provided on a map. In either case, the intent of the buffer is to provide awareness of the site, and to prevent any activity from occurring within the buffer radius that would jeopardize species persistence.

Bureau Special Status & Survey and Manage Fungi – Not Affected

Special Status Fungi

With the exception of incidental fungi sites reported by contractors, the Jumping Bean Ecological Forestry Project was not surveyed for ISSSP Sensitive fungi. Pre-disturbance surveys for Special Status fungi are not practical, nor required per BLM – Information Bulletin No. OR 2004-121, which states "If project surveys for a species were not practical under the Survey and Manage standards and guidelines (most Category B and D species), or a species' status is undetermined (Category E and F species), then surveys will not be practical or expected to occur under the Special Status/Sensitive Species policies either (USDA/USDI 2004a, p.3)."

Current special status fungi were previously in the aforementioned S&M categories which did not consider surveys practical, and are therefore exempt from survey requirements (See Table 25). With the recent instatement the new Interagency Special Status Species policy (ISSSP), 14 species of fungi were designated as Sensitive; 10 are suspected to occur on Medford District, while the remaining 4 have been documented. As mentioned above, none of these species require surveys.

Table 25: Bureau Sensitive (ISSSP) Fungi Documented or Suspected on Medford BLM

Species	Category	Findings
Arcangeliella camphorata	B	Suspected
Boletus pulcherrimus		Documented
Chamonixia caespitosa		Suspected
Dermocybe humboldtensis	B	Suspected
Gastroboletus vividus	B	Suspected
Gymnomyces fragrans		Suspected
Helvella crassitunicata	B	Suspected
Phaeocollybia californica	B	Documented
Phaeocollybia oregonensis	B	Suspected
Psuedorhizina californica		Suspected
Ramaria spinulosa var. *diminutiva*	B	Suspected
Rhizopogon chamaleontinus	B	Suspected
Rhizopogon ellipsosporus	B	Documented
Rhizopogon exiguus	B	Documented

Of the 4 documented species, two (per the Oregon/Washington Geographic Biotic Observation (GeoBOB) database), *Phaeocollybia californica* (PHCA40) and *Rhizopogon ellipsosporus* (RHEL3), have been found in the Grants Pass Resource Area. The closest *Phaeocollybia californica* site exists approximately 10 miles west/southwest from the closest unit in the Jumping Bean Ecological Forestry Project, and the closest *Rhizopogon ellipsosporus* site is in Butte Falls Resource area, approximately 0.5 miles from the closest Jumping Bean Ecological Forestry Project unit.

For PHCA40, dispersal via spore transport and/or mycelia network is improbable, as sites and the Activity Area reside within different HUC 5 watersheds (the *P. californica* site is in the Hellgate Canyon – Rogue River HUC5, whereas the Jumping Bean Ecological Forestry Project is in the Grants Pass – Rogue River and Jumpoff Joe HUC5s) and the Hellgate Canyon – Rogue River HUC5 is separated from the other aforementioned watersheds by steep ridges, several ravines, and major road systems. There are no documented sites of *P. californica* in the Grants Pass – Rogue River and Jumpoff Joe HUC5 watersheds, where the Jumping Bean Ecological Forestry Project Planning Area is located.

In the case of RHEL3, dispersal via spore transport and/or mycelial network is more probable, as it is only 0.5 miles away from the closest unit. However, there are differences in site conditions that may decrease the probability of spore/mycelial network dispersal. The known RHEL3 site is located on a northwestern aspect, whereas the unit is located on a northeasterly aspect. As the unit prescription calls for 40% canopy retention, is only 16.9

ac in size, and is in an area that has undergone extensive botanical surveys, the probability of an RHEL3 site within the unit is low.

Additionally, the probability of an RHEL3 site occurring within the unit and experiencing resource management at a level which jeopardizes species persistence is even lower.

While it is possible that this project is occurring within potential habitat for some species, there is very little information available describing the *exact* habitat requirements or population biology of these species (USDA/USDI 2004d, p.148). The 2004 FEIS to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines addresses this type of incomplete and/or unavailable information (p. 108-109). However, the *2004 Record of Decision* (ROD) *to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines*, offers a broad scale prospective of this current situation in stating, "Any discussion of risk based on rarity and likelihood of disturbance must recognize that, for many species, only a small percentage of potential habitat has been surveyed. Reserves have not been surveyed to the same degree as Matrix and Adaptive Management Area land allocations. The Reserves were not surveyed because there has been little management-induced disturbance there. The vast majority of pre-disturbance surveys have been located in the Matrix and Adaptive Management Area land allocation (19 percent of the Northwest Forest Plan area), so that is where many of the known sites have been found. This does not mean that a disproportionate amount of their habitat is located in Matrix. If these species are truly closely associated with late-successional or old-growth forests, we can reasonably expect that the large amount of federally managed lands in Late-Successional and Riparian Reserves which provide the most amount of this type of habitat (86 percent of currently existing late-successional forests is in reserves) would also provide, at a minimum, its proportionate share of the habitat to support populations of these species (2004 ROD to Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines, p.11)."

Based on the above information, the likelihood of a sensitive fungi occurring within a single unit(s) encompassed in the Activity Area is low. The likelihood of contributing toward the need to list is not probable.

<u>Survey and Manage Fungi</u>
Aside from historic Survey and Manage fungi sightings, the entirety of the Jumping Bean Ecological Forestry Project Activity Area was not surveyed for fungi to Survey and Manage protocol standards. For NEPA decisions signed in fiscal year 2011 and beyond for habitat-disturbing activities in old-growth forests, the 2001 S&M ROD (Forest Service and Bureau of Land Management 2001, S&G-9) gives direction to conduct equivalent effort surveys for category B fungi species if strategic surveys have not been completed for the province encompassing the project. The Survey and Manage Standards and Guides defines old growth forest as an ecosystem distinguished by old trees and related structural attributes that are usually at least 180 to 220 years old (Forest Service and Bureau of Land Management 2001, S&G-79). Strategic surveys have not been completed for category B fungi for the province containing the Jumping Bean Ecological Forestry Project Activity Area, and equivalent effort surveys have not been completed as units do not exceed 180 years of age.

Alternative 1 – No Action

T&E, ISSSP Sensitive, & Survey and Manage Vascular Plants
There would be no direct or indirect effects to ISSSP Sensitive or Survey and Manage vascular plants under Alternative 1 because no physical disturbance would occur that could impact them.

ISSSP Sensitive & Survey and Manage Nonvascular Plants
No direct or indirect effects would occur to ISSSP Sensitive or Survey and Manage nonvascular plants because no activities would occur that could impact them.

ISSSP Sensitive & Survey and Manage Fungi
There would be no direct or indirect effects to ISSSP Sensitive or Survey and Manage fungi under Alternative 1 because no physical disturbance would occur. There would be no loss of late-successional forest which may provide suitable habitat for the 10 suspected and 4 documented Medford District BLM Sensitive fungi.

Alternative 2

Direct and Indirect Effects

T&E, ISSSP Sensitive, & Survey and Manage Vascular Plants
There would be no direct or indirect effects to ISSSP or Survey and Manage vascular plants under Alternative 2 because sites requiring mitigation found in the final planning units (Table 24) would receive protection buffers.

ISSSP Sensitive & Survey and Manage Nonvascular Plants
No direct or indirect effects would occur to nonvascular ISSSP Sensitive or Survey and Manage species under Alt 2 because sites requiring mitigation found in the final planning units (Table 24) would receive protection buffers.

ISSSP Sensitive & Survey and Manage Fungi

ISSSP Sensitive Fungi
Addressing Direct and Indirect effects to ISSSP Fungi species is complicated, as no official fungi surveys were performed for ISSSP Sensitive fungi - thus it is unknown if Sensitive fungi are present in the treatment units. Potential habitat for many of the 20 Sensitive species exists in portions of the Activity Area, as specific areas of the project exhibit a predominant Douglas-fir component (generally considered an indicator species, but recorded sites commonly have white fir as well). However, predicting presence of Sensitive fungi is difficult because habitat requirements are poorly understood. Because of their rarity across the Northwest Forest Plan area, it is unlikely that populations are present in the final treatment units. However, if present, they could be directly or indirectly adversely impacted by the proposed actions in Alternative 2, detailed after the Survey and Manage Fungi Direct/Indirect effects discussion.

Survey and Manage Fungi

Addressing Direct and Indirect effects to S&M Fungi species is complicated because, no formal fungi surveys have been conducted in accordance with Survey and Manage protocol in the Jumping Bean Ecological Forestry Project Activity Area. Historical sites documented and listed in Table 24 and would be buffered. In addition, harvest activities would likely occur when the species are dormant so possible effects to sites would be further minimized.

Thinning/Commodity Extraction

Harvest can have varying degrees of adverse impacts on fungi, depending on the level of tree removal and ground disturbance. Removing, disturbing, or compacting the top layer of organic material and mineral soil could negatively impact fungi. The main and most extensive part of the fungus consists of a below-ground mycelia network that resides in the top few inches of mineral soil.

Mycelia networks are often connected to multiple trees through their root systems. In one study, fungal mycelia networks ranged in size from 1.5 - 27 square meters (Dahlberg and Stenlid 1995). Disruption of mycelia networks could occur during timber harvest, construction or ripping of roads or landings, removal of host trees that sustain the ectomycorrhizae, or burning post-harvest slash piles. The effect of these activities on fungi is a loss of species diversity and abundance (Amaranthus et al., 1996). Alternative 2 presents a potential risk of impacting Sensitive/S&M fungi, if present, because it proposes temporary roads and the harvesting of trees.

Fungi could also be directly impacted from radiant heat during burning of post-harvest slash piles. Effects of pile burning include damage or death of mineral soil fungi including the mycelia and spores; loss of litter, organic matter and large wood, resulting in reduced moisture retention capability, loss of nutrient sources, and changes in fungal species diversity and abundance. Implementation of Alternative 2 creates the greatest threat of damage to fungi from burn piles because the trees would be harvested. However, commercial thinning activities do not produce as much slash as Regeneration harvesting, and the area impacted by burn piles would be a small percentage of acreage compared to the total amount of acres in the Planning Area.

Prescribed Burning

Alt 2 proposes prescribed burning activities on 1,201 acres, which comprise 52% of the acres within project units. Fire is a natural process that has been suppressed since the turn of the 20th century, and as a result, dangerous fuel loads have accumulated on much of the public lands. While the intent of fuels reduction – decreasing the chance of ignition and spread of high-intensity wildfire - provides an overall benefit to fungi species, there are some possible short term impacts.

As previously mentioned, fungi could also be directly impacted from radiant heat during pile burning. Effects of pile burning include damage or death of mineral soil fungi including the mycelia and spores; loss of litter, organic matter and large wood, resulting in reduced moisture retention capability, loss of nutrient sources, and

changes in fungal species diversity and abundance. Implementation of Alternative 2 creates the greatest threat of damage to fungi from burn piles because a majority of fuels reduction implementation utilizes piling and burning. However, the area impacted by burn piles would be a small percentage of acreage compared to the total amount of acres receiving fuels reduction.

Cumulative Effects for ISSSP Sensitive/S&M Vascular, Nonvascular, and Fungi

Information is not available for rare plant populations in the Jumping Bean Ecological Forestry Planning Area prior to BLM botanical surveys, which began during the last 30 years. However, it is assumed that past activities, described in the affected environment, likely affected Sensitive / S&M plants and populations by damaging or destroying individuals or reducing or degrading suitable habitat.

Although information is not available for logging plans on private industrial forest lands, it is assumed commercial harvest will occur in the future and privately-owned forests will be in early to mid-seral stages. Sensitive species do not receive protection on privately-owned lands, but will continue to be protected and conserved on federal lands, according to BLM policies and federal regulations.

Sensitive and/or S&M plants would not be directly impacted by the activities proposed in Alternative 2 because surveys have been conducted and the Sensitive/S&M plants located would receive protection buffers. Project design features would reduce the risk of introducing or spreading noxious weeds during project implementation, which could potentially impact Sensitive vascular plant habitat. No Sensitive Status or Survey and Manage vascular or nonvascular plants would trend toward listing (ISSSP) or cease persisting (S&M) as a result of implementing the activities proposed in Alternative 2.

The potential cumulative effect of the proposed project on Sensitive fungi would be the risk of impacting rare populations on 2,326 acres during forest management activities. However, the proposed harvest would occur on matrix lands, which are designated for timber production and harvest. Across the Northwest Forest Plan area, approximately 14 percent of the 8 million acres of late-successional forest are in matrix and are available for harvest, while 86 percent are designated as Late Successional Reserves, congressionally reserved and administratively withdrawn areas, and Riparian Reserves.

It is estimated that over the next 50 years, late-successional forest would develop at 2.5 times the rate of loss through stand-replacement fires and harvest (USDA/ USDI 2004c, 107-111). This reserve system spread across the landscape is intended to provide protection and development of late seral habitat for the protection and expansion of late-successional associated rare plants. Under the Northwest Forest Plan, at least 15 percent late seral (80-plus years old) conifer forest must be maintained in each 5th field watershed (USDA/USDI 1994, p. C-44).

Because of their rarity across the Pacific Northwest Forest Plan Area, it is unlikely Sensitive fungi are present in the Jumping Bean Ecological Forestry Project timber harvest units. The risk is low that they would be impacted. The same holds true for Survey and Manage A & C fungi. It is protection of species at the landscape level that

ensures Sensitive species will not trend toward listing and S&M species will persist. The assumption is made that protecting known sites (current and future found) of these Sensitive and S&M (categories A-E) fungi, in addition to conducting large-scale inventories throughout the Pacific Northwest, will be adequate in ensuring that this project and future projects would not contribute to the need to list them (USDI 2004, 5-2) or jeopardize persistence (2001 S&M Standards and Guidelines p-3).

APPENDIX 7 – MIGRATORY BIRDS

Specialist Report

Land Birds (Neotropical Migrants and Year-Round residents)

Land birds use a wide variety of habitats, including late-successional forests, riparian areas, brush in recovering clear-cuts, and small trees in developing stands. Some birds, such as the olive-sided Flycatcher, use residual canopy trees for perching and forage over adjacent clear-cuts. Many land birds are associated with deciduous shrubs and trees in early-successional habitats (e.g., Rufous hummingbirds). All neotropical migrants go to Central or South America each year. They are addressed here due to widespread concern regarding downward population trends and habitat declines. Neotropical birds, as a group, are not on BLM's list of special status species.

BLM has issued interim guidance for meeting BLM's responsibilities under the Migratory Bird Treaty Act and Executive Order (EO) 13186. Both the Act and the EO promote the conservation of migratory bird populations. The interim guidance was transmitted through BLM Instruction Memorandum (IM) No. 2008-050. The IM relies on two lists prepared by the U.S. Fish and Wildlife Service (USFWS) in determining which species are to receive special attention in land management activities; the lists are *Bird Species of Conservation Concern* (BCC) found in various Bird Conservation Regions and *Game Birds Below Desired Condition* (GBBDC).

In December, 2008, the USFWS Service released The Birds of Conservation Concern 2008. This publication identifies species, subspecies, and populations of migratory and non-migratory birds in need of additional conservation actions, updating the April 2008 Birds of Conservation Concern List. Medford District BLM biologists conferred with local bird groups and knowledgeable individuals to identify which birds on the list in our region (Bird Conservation Region 5, USFWS Region 1) are present within Medford District BLM lands. Table 26 below displays a list of the Migratory Birds of Conservation Concern (BOCC) and Game Birds below Desired Condition (GBBDC) in the Grants Pass Resource Area that are known or likely to be present in the Jumping Bean Ecological Forestry Project Planning Area and could be affected by the Proposed Action.

Land Birds Effects from Vegetation Management

Due to the variety of land-bird habitat requirements, any action that changes or removes vegetation used by one species may benefit another. Species requiring dense cover and forage that have benefited from lack of fire and dense understories could be adversely affected by thinning treatments designed to reduce vegetation density. Due to habitat removal, songbird composition and abundance in treated stands could be reduced for approximately 25 to 40 years (Janes 2003; Hagar et al., 2001; Siegel et al., 2003). There would be no reduction in the amount of late-successional forest habitat from this project.

Untreated late-successional forest habitat would continue to provide adequate hiding cover, foraging, and nesting habitat within the Planning Area for birds that use older forests. Habitat for birds that use early seral habitat would increase as a result of the small gap openings in Variable Density Thinning. Species, such as the Rufous Hummingbird, which use nectar producing plants would benefit from the increase in forbs and flowering shrubs that would occur post treatment. This increase would continue until the tree canopy recovers and shades out these plants, which would occur in approximately 25 to 40 years.

There would be no complete removal of any type of potential bird habitat under Alternative 2. Treatments would maintain key habitat features, which would minimize impacts within the Planning Area.

Some individual birds may be displaced during project activities. However, untreated areas adjacent to the treatment areas would provide refuge and nesting habitat, minimizing short-term loss of habitat. In treated stands, riparian areas not receiving treatment would also serve as refugia in proposed harvest units. Activities occurring during active nesting periods could cause some nests to fail. However, seasonal restrictions (Section 2.3.3.7) would protect most nests from disturbance during project activities.

Treatments occurring during the critical nesting periods for most species may cause some nests to fail. However, the failure of a nest during one nesting season would not be expected to reduce the persistence of any bird species in the watershed because sufficient habitat of all types would be retained throughout the Planning Area to support the wide diversity of bird species in the area. Additionally, a Memorandum of Understanding (MOU) was signed between the USFWS and the BLM in April, 2010, which identified strategies to avoid or minimize adverse impacts on migratory birds. The Jumping Bean Ecological Forestry Project would follow these guidelines where feasible to reduce the impacts to migratory birds. For example, many of the PDFs listed to mitigate effects to some species, such as seasonal restrictions, would also benefit migratory birds.

Summary and Conclusions

Partners in Flight support the eco-regional scale, as appropriate, for analyzing bird populations (http://www.partnersinflight.org/description.cfm). The potential failure or loss of some nests would not be measurable at the regional scale because of the small scope of the project in relationship to the regional scale. Therefore, under the Proposed Action, populations in the region would be unaffected**.** Breeding bird surveys in the Southern Pacific Rainforest Physiographic Region (which includes western Oregon) indicate that songbirds are declining. The exact cause of these declines is still unclear, but issues associated with their winter grounds (Central and South America) are suspected to be an important factor (Sauer et al., 2004).

Table 26: Birds of Conservation Concern and Game Birds Below Desired Condition in the Planning Area

SPECIES	STATUS	Project within RANGE (Y/N)	Project Status 1/ Not Present 2/ Not Affected 3/ Affected	Comments Regarding Status
American peregrine falcon	BOCC	Y	Not Affected	No nesting habitat in the Planning Area, but they could forage in the Planning Area. Project activities would not affect this species at the landscape scale.
Bald eagle	BOCC	Y	Not Affected	No known Bald Eagle Nest Sites in the Planning area. If any nests are located prior to implementing the project, it would be protected under the 1995 RMP guidelines and the Bald and Golden Eagle Protection Act. Alternative 2 would remove a limited number of potential nest/roost trees, bald eagles would not be precluded from nesting and foraging within the watershed due to retention of larger suitable nest trees not proposed for treatment under this project.
Band tailed pigeon	GBBDC	Y	Not Affected	Adequate potential habitat exists within and adjacent to the Activity Area. Beneficial effects from the creation of small gap openings in Variable Density Thinning areas. Proposed activities impacts are inconsequential to individuals and/or habitat at the Planning Area scale.
Mourning dove	GBBDC	Y	Not Affected	Adequate potential habitat exists within and adjacent to the Activity Area. Ground disturbance from treatment activities and prescribed fire would stimulate growth of shrubs and herbaceous plants. Proposed activities impacts are inconsequential to individuals and/or habitat at the Planning Area scale.
Olive sided flycatcher	BOCC	Y	Not Affected	Adequate levels of snags would be retained. Adequate potential habitat exists within and adjacent to the Activity Area. Beneficial effects from the creation of small gap openings in Variable Density Thinning because they forage in open areas. Proposed activities impacts are inconsequential to individuals and/or habitat at the Planning Area scale.
Purple finch	BOCC	Y	Not Affected	Adequate potential habitat exists within and adjacent to the Activity Area. Proposed activities impacts are inconsequential to individuals and/or habitat at the Planning Area scale.
Rufous Hummingbird	BOCC	Y	Not Affected	Untreated areas would be left. Ground disturbance from treatment activities and prescribed fire would stimulate growth of shrubs and herbaceous plants. Adequate potential habitat exists within and adjacent to the Activity Area. Proposed activities impacts are inconsequential to individuals and/or habitat at the Planning Area scale.

BOCC – Birds of Conservation Concern GBBDC – Game Birds Below Desired Condition

APPENDIX 8 – WILDLIFE SPECIAL STATUS SPECIES

Specialist Report

On February 7, 2008 a new Special Status Species list went into Effect (IM No. OR-2008-038). This list has two categories, Sensitive and Strategic. According to BLM Special Status Species Management (6840), only Bureau Sensitive and federally listed species are required to be addressed in NEPA documents. All listed species were considered and evaluated for this project, and only those that could be impacted by the Proposed Action are discussed in more detail in the EA.

The table below lists the Special Status Species that are Documented or Suspected on lands within the Grants Pass Resource Area and their status regarding the Jumping Bean Ecological Forestry Project.

Table 27: Special Status Species in the Activity Area

Special Status Species				
SPECIES	**2/07/08 STATUS**	**Project within RANGE (Y/N)**	**Project Status** **1/ Not Present** **2/ Not Affected** **3/ Affected**	**Comments Regarding Status**
Birds: Bureau Sensitive & Federally Threatened				
American peregrine falcon	BSEN	Y	Not Affected	No nesting habitat in the Planning Area, but they could forage in the Planning Area. Project activities would not affect this species at the landscape scale.
Bald eagle	BSEN	Y	Not Affected	No known Bald Eagle Nest Sites in the Planning Area. If any nests are located prior to implementing the project, it would be protected under the 1995 RMP guidelines and the Bald and Golden Eagle Protection Act. Alternative 2 would remove a limited number of potential nest/roost trees, bald eagles would not be precluded from nesting and foraging within the watershed due to retention of larger suitable nest trees in areas not proposed for treatment for this project.
Lewis' woodpecker	BSEN	Y	Not Present	N/A
Birds: Bureau Sensitive & Federally Threatened				
Marbled murrelet	FT	N	Not Present	N/A

Special Status Species				
SPECIES	**2/07/08 STATUS**	**Project within RANGE (Y/N)**	**Project Status** **1/ Not Present** **2/ Not Affected** **3/ Affected**	**Comments Regarding Status**
Northern spotted owl	FT	Y	Affected	Refer to Section 3.7 of the EA for a discussion of the affected environment and environmental effects of the alternatives related to this element of the environment.
Purple martin	BSEN	Y	Not Affected	Possible migrant in Josephine and Jackson Counties. No detectable effects from the Proposed Action.
Tri-colored Blackbird	BSEN	Y	Not Affected	No habitat in the Planning Area.
White-headed woodpecker	BSEN	Y	Not Affected	Adequate potential habitat exists in and adjacent to the Planning Area. Project activities would not adversely affect this species at the landscape scale as adequate levels of snags would be retained (PDF Ch. 2) post treatment.
White-tailed kite	BSEN	Y	Not Present	No anticipated effects.
Amphibians: Bureau Sensitive				
Black salamander	BSEN	Y	Not Affected	Adequate potential habitat exists within and adjacent to the Planning Area. No known sites located in project units. Primary habitat (rocky talus in open oak meadows) would remain untreated.
Foothill yellow-legged Frog	BSEN	Y	Not Affected	Project activities would not affect this species if present in the Planning Area.
Reptiles: Bureau Sensitive				
Northwestern pond turtle	BSEN	Y	Not Affected	Located in the watershed at large water sources, but not expected to occur in or adjacent to project units. No anticipated effects.

Special Status Species				
SPECIES	**2/07/08 STATUS**	**Project within RANGE (Y/N)**	**Project Status** **1/ Not Present** **2/ Not Affected** **3/ Affected**	**Comments Regarding Status**
Mammals: Bureau Sensitive and Federal Candidate				
Pacific fisher	FC	Y	Affected	Over the past 15 years, the BLM has conducted surveys using bait stations with motion and infrared detection cameras following established survey protocol for forest carnivores (Zielinski and Kucera 1995). Over this sample period, a total of 66 camera stations were placed within a 10 mile radius of the Planning Area. No fishers were detected during these survey efforts. Additionally, the Oregon Department of Fish and Wildlife conducted their own survey efforts utilizing the same protocol methods and sampled several areas within the Planning Area. These surveys did not detect fisher as well (Niemela 2012). Fishers have never been detected with camera surveys north of the Rogue River in the Siskiyou mountains. Therefore, the fisher is considered not present and unaffected by project activities.
Fringed myotis Pacific pallid bat	BSEN	Y	Not Affected	The fringed myotis and pallid bat, are associated with late-successional habitat, and suspected to occur in the Planning Area. Some loss of potential roosting sites, such as snags and large mature trees, important to other bat species is expected from harvest activities. However, adequate amounts of roosting habitat would be retained through green tree and snag retention as listed in the PDFs, which would help minimize potential effects. Additionally, some beneficial effects are anticipated, since the treatment of dense stand conditions (thinning) would improve bat habitat by reducing echolocation interference, cluttered flight paths, and access to snags.
Townsend's big-eared bat	BSEN	Y	Not Affected	Townsend's big-eared bats hibernate in caves and mines during winter (Sherwin 1998). There are no mine adits in the Planning Area with historical Townsend's big-eared bat observations. Therefore, no effects are anticipated.

Special Status Species				
SPECIES	**2/07/08 STATUS**	**Project within RANGE (Y/N)**	**Project Status** **1/ Not Present** **2/ Not Affected** **3/ Affected**	**Comments Regarding Status**
Invertebrates: Bureau Sensitive				
Chase sideband snail	BSEN	N	Not Present	N/A
Coronis Fritillary	BSEN	Y	Not Present	N/A
Franklin's Bumblebee	BSEN	N	Not Present	N/A
Invertebrates: Bureau Sensitive				
Johnson's Hairstreak	BSEN	N	Not Present	N/A
Mardon skipper butterfly	FC	N	Not Present	N/A
Oregon Shoulderband snail	BSEN	Y	Not Affected	See Wildlife Effects Section in Appendix 1 regarding effects to mollusks.
Travelling sideband snail	BSEN	Y	Not Affected	See Wildlife Effects Section in Appendix 1 regarding effects to mollusks.

Status:

FT - USFW Threatened - likely to become endangered species within the foreseeable future
FC - USFW Candidate - proposed and being reviewed for listing as threatened or endangered
BSSEN - Bureau Sensitive (BLM) - Generally these species are restricted in range and have natural or human caused threats to their survival.

APPENDIX 9 – VISUAL RESOURCE MANAGEMENT

Under the 1995 Medford District Resource Management Plan (RMP), the Visual Resource Management (VRM) Classes for the Jumping Bean Project are VRM II-IV**.** The management guidance for these VRM Classes (1995 RMP) are as follows:

> VRM Class II objectives are to manage lands for low levels of change to the characteristic landscape. Management activities may be seen but should not attract attention of the casual observer. Changes should repeat the basic elements of form, line, color, texture, and scale found in the predominant natural features of the characteristic landscape.
>
> VRM Class III objectives are to manage lands for moderate levels of change to the characteristic landscape. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements of form, line, color, texture, and scale found in the predominant natural features of the characteristic landscape.
>
> VRM Class IV objectives are to manage lands for moderate levels of change to the characteristic landscape. Management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the effect of these activities through careful location, minimal disturbance, and should repeat the basic elements of form, line, color, and texture.

Visual Contrast Rating for VRM

The Visual Contrast Rating Worksheet was completed from Key Observation Points (KOPs) as a field tool to assess if the proposed activities would change the natural characteristic of the landscape.

<u>KOPs</u>
KOPs were selected to identify potential effects to the visual resources from the most critical viewpoints[9]. Interstate 5 (I-5) is classified as VRM II within the foreground/middle ground of I-5 (foreground/middle ground being defined as land within one mile or to the first ridge, whichever is closer). The Activity Area is between ¾ and 1 ¼ miles from I-5 thus the closest points are VRM II and the further points are VRM III.

For this project, the points were selected along I-5. KOP #1 is 1 mile north of Exit 66 of I-5. Two linear KOPs were selected, one heading north and one heading south on I-5 between KOP #1 and Exit 61 of I-5. During the VRM evaluation, Units 1-2A, 1-2, and 1-2B were assessed to see if they were visible from I-5 and if the proposed treatments would meet VRM II & III visual quality objectives.

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[9] Critical Viewpoints are defined by BLM Handbook 8431-1 Visual Contrast Rating (BLM 1986b) as areas commonly traveled routes or other likely observation points.

These areas were assessed to see if the this view would be within low level of change to the characteristic landscape for VRM II and moderate levels of change to the characteristic landscape for VRM III, as well as would the proposed treatment retain the basic elements of form, line, color, texture, and scale found in the predominant natural features of the characteristic landscape.

The visual assessment from these locations considered the season of use, light conditions, angle of observation, number of viewers, and length of time the project is in view as recommended in the BLM VRM Manual 8431.

Findings and Recommendations:

Units located in T34S-R6W-Section 1 were evaluated from three KOPs along the I-5 corridor. These units are in view for less than 3 minutes in either direction and are partially blocked by roadside vegetation. Red Mountain is a prominent feature attracting the casual observer's eye and partially blocking the view of the proposed units from the north. The field review determined the prescriptions for these units would result in a "weak" change in the contrast of color of the land, and a "weak" change in contrast in all four elements (form, line, color, texture) of vegetation. The surrounding landscape is varied and numerous examples of vegetative modification exist.

The temporary route construction and Hazardous Fuels Reduction treatments would not be visible due to the dense canopy cover. Variable Density Thinning would create natural looking random gaps in the canopy consistent with the surrounding landscape. The specific unit prescriptions for Alternative 2 would meet the management guidelines for VRM II and would result in low levels of change to the characteristic landscape and would not attract the attention of the casual observer. The prescriptions for these units have been developed to repeat the basic elements of form, line, color, texture, and scale found in the predominant natural features of the characteristic landscape. No further Project Design Features are recommended, beyond those identified in Section 2.3.2 of this EA.

APPENDIX 10 - AIR QUALITY

Specialist Report

Analysis of Proposed Action Effects of Burning Polyethylene Plastic Sheeting used to Cover Slash Piles for the Jumping Bean Ecological Forestry Project Environmental Analysis

Compliance with the Clean Air Act and the Oregon Department of Forestry Smoke Management Plan

The Oregon Department of Forestry Smoke Management Plan addresses the issue of using plastic to cover piles. OAR 629-048-0210(2), Best Burn Practices; Emission Reduction Techniques, states, ". . .best burn practices involve methods that ensure the most rapid and complete combustion of forest fuels .. . ." Covering of hand piles is a "Best Burn Practice." OAR 629-048-0210(4) states, "When covers will not be removed and thus will be burned along with the piled forest fuels, the covers must not consist of materials prohibited under OAR 340-264-0060(3), except that polyethylene sheeting that complies with the following may be used: a) Only polyethylene may be used. All other plastics are prohibited."

Air quality concerns have led to prohibitions on the open burning of household plastics in many areas of the country. "Inasmuch as regions in Oregon where silvicultural burning occurs are exposed to significant amounts of precipitation, there is an overall emissions reduction benefit from covering silvicultural piles. Polyethylene does not include chlorinated compounds or significant amounts of other chemicals likely to form uniquely toxic emissions, nor have these been demonstrated in the literature" (Wrobel and Reinhart, 2003).

An addendum to the original Wrobel and Reinhart literature review (2003) on the use of polyethylene sheeting to enhance combustion efficiency, discusses the rules affecting polyethylene (PE) burning. Oregon has addressed the issue based on the findings reported by Wrobel and Reinhart (2003). "The available literature does not support a contention that burning polyethylene (PE) sheeting would produce unique chemicals or classes of chemicals that are not also found in emissions from burning wood debris" (Wrobel and Reinhart 2003).

Oregon Department of Environmental Quality and the Oregon Department of Forestry Memorandum of Understanding for Use of Polyethylene Plastic

The Oregon Department of Environmental Quality and the Oregon Department of Forestry developed an MOU for PE, adopted in 2005. The MOU suggests the plastic material should be removed prior to burning when practicable. Adequate debris or slash is placed over the plastic sheeting to ensure the plastic remains covering the piles until the piles are burned. Due to the difficulty of removing the plastic cover from below the debris, especially after long-term exposure to the elements, it would be operationally impractical to remove the plastic prior to burning for this proposed action. Therefore, the plastic would be left in place and burned in the pile.

Evaluation of Alternative Materials to Cover Slash Piles

Alternative coverings, such as Kraft paper, are used in other parts of the country to cover burn piles in place of PE. Combustion studies involving lignocellulosic materials suggest that uncoated Kraft paper may produce some of the same substances as polyethylene (Garcia et al., 2003). The study also states that from an operational standpoint, Kraft paper is a more expensive, less durable, and less effective means of minimizing moisture intrusion into the pile because of its tendency to degrade more rapidly than PE.

In turn, fuel moisture is increased, combustion efficiency is reduced, and more accelerants may be needed for pile ignition. Additionally, the weight and means of packaging Kraft paper contributes to decreased production and increased per unit cost of covering piles. Kraft paper averages 55 pounds per square bundle compared to 12 pounds per roll for polyethylene use. It takes 3 bundles of Kraft paper (165 pounds) to cover the same amount of piles that one roll of PE (12 pounds) will cover. Kraft paper bundles are 4-foot by 4-foot square and are awkward to pack into a unit compared to a roll of polyethylene that can be easily packed into the unit. The size and shape of Kraft paper bundles combined with increased weight could also contribute to increased potential for worker injuries (e.g., knee, back, and ankle sprains) during operations. Kraft paper has been utilized to cover slash piles on various projects in southern Oregon.

Weather Conditions during Hand Pile Burning

Pollutant concentrations are reduced by atmospheric mixing, which depends on weather conditions such as temperature, wind speed, amount of sunlight, and the movement of high and low pressure systems and their interaction with the local topography, for example, mountains and valleys. Normally, temperature decreases with altitude. But when a colder layer of air settles under a warm layer, producing a temperature inversion, atmospheric mixing is impeded and pollutants may accumulate near the ground. Inversions can become sustained under a stationary weather system coupled with low wind speeds. The BLM would schedule hand pile burning primarily from October to May during unstable atmospheric conditions (e.g., rain, snow, or storm events) when atmospheric mixing is occurring. Wet season conditions minimize the amount of smoke emissions by burning when duff and dead woody fuel have the highest moisture content, which reduces the amount of material actually burned. All piles would be covered with 4 mil polyethylene plastic sheeting to facilitate rapid ignition and consumption of fuels to minimize residual smoke.

Timing of all prescribed burning would be dependent on weather and wind conditions to help reduce the amount of residual smoke to the local communities. If residual smoke impacts exceed limits set by the Oregon Smoke Management Plan, additional burning would be suspended until given the notice to proceed by the ODF Forester.

Conclusion

The use of polyethylene plastic sheeting would follow guidance from DEQ and Oregon Department of Forestry Smoke Management Plan. OAR 629-048-0210 (a) “Only polyethylene may be used. All other plastics are prohibited; (b) the size of each polyethylene cover must not exceed 100 square feet. For small piles, covering only an area necessary to achieve rapid ignition and combustion, instead of the entire pile, is encouraged; (c) the thickness of the polyethylene cover must not exceed 4 mil.” On hand

pile units the 4 mil polyethylene sheeting typically covers 90% of the surface of the pile, with a maximum of 100 square feet of coverage.

Burning would occur after coordination with ODF on the smoke management forecast and instructions to minimize the likelihood of public health effects and visibility impairment. The literature suggests that the emissions to the atmosphere contributed by the sheet of PE covering are chemically similar to the emissions from the underlying pile of silvicultural debris. For many of these emissions, such as CO, CO_2 and particulate matter, the amount emitted from the woody debris will of course overwhelm the contribution from the PE. The available literature does not support a contention that burning PE sheeting would produce unique chemicals or classes of chemicals that are not also found in emissions from burning wood debris (Worbel & Reinhardt, 2003).

APPENDIX 11 – NON-HIGH PRIORITY SITE STATUS FOR RED TREE VOLES

Grants Pass Resource Area
Medford District BLM
January 8, 2013

INTRODUCTION

The Jumping Bean (JB) project is one of five assigned Western Oregon Ecological Forestry Projects, as announced by Secretary of Interior, Ken Salazar. The JB Ecological Forestry Project has been planned and designed under the conceptual framework of the *Dry Forest Restoration Principles* as described by Drs. Jerry F. Franklin and K. Norman Johnson (Franklin and Johnson 2010). The primary focus of this project is to design a project that integrates ecosystem restoration, conservation of late successional habitat and recovery of the northern spotted owl, and timber production in an ecologically sensitive manner. The broad goals of this project are as follows:

- Utilize ecological forestry principles and plant communities to restore characteristic structure and composition, ecological conditions, and ecosystem functions.
- Reduce stand density to increase long term tree growth, quality, and vigor of the remaining trees and increase resistance of landscape to fire, drought, and insects.
- Create diversified stand structure (height, age, and diameter classes) to enhance structural complexity and increase the diversity of tree and shrub species.
- Reduce both natural and activity based fuel hazards.
- Produce a sustainable supply of timber and other forest commodities to provide jobs and contribute to community stability.

A great deal of forethought and consideration went into the planning of this project in terms of the spatial location of proposed treatments and the types and intensity of treatments across the landscape. Through this extensive planning process, approximately 2,326 acres of forest lands were identified for treatment where the above objectives could be met. Of these acres, up to 1,125 acres have been identified for treatments that could manipulate the overstory tree layer (some commercial component) such that pre-disturbance surveys for RTVs would be required. Red tree vole (RTV) surveys were conducted in 2011 and 2012 in conformance with the RTV survey protocol (USDA USDI 2002) within all of these forest stands where habitat modifying activities are proposed and habitat characteristics met the minimum requirements as described in the RTV survey protocol.

The Grants Pass Resource Area is proposing to designate three RTV sites as Non-High Priority (NHP) sites within the Jumping Bean planning area. The designation of these three RTV sites as NHP and would still maintain the persistence of RTVs within the general project area, the 5th field watershed, and the range of the species, in accordance with the Survey and Mange Standard and Guides (USDA USDI 2001).

ANALYSIS

Life history and Ecology

The red tree vole (*Arborimus longicaudus*) is a small arboreal microtine rodent that is endemic to the coniferous forests of western Oregon and northwestern California (Howell 1926, Maser 1966, Verts and Carraway 1998). Red tree voles are primarily arboreal but will come to the ground to move between trees if there are no branch pathways between trees (Swingle and Forsman 2009). Needles and twig bark of Douglas-fir, grand fir, western hemlock, and Sitka spruce are the only known foods eaten by red tree voles (Walker 1930, Maser 1966). Red tree voles are prey to many species of mammals and birds, including weasels (*Mustela* spp.) and the northern spotted owl (Forsman et al. 1984, 2004; Graham and Mires 2005; Swingle et al. 2010). In areas where they are particularly abundant they may provide 30–50% of the items consumed by spotted owls (Forsman et al. 1984).

Red tree voles are solitary and build their nests in trees near their food. Although it is common to find multiple nests in the same tree, there have been only a few cases in which climbers visually observed more than one occupied vole nest in the same tree (Benson and Borell 1931, Maser 1966, Forsman and Swingle unpubl. data). Nests typically consist of a compact mass of conifer branch tips (cuttings), resin ducts, fecal pellets, dead twigs, debarked twigs, and lichens (Howell 1926, Benson and Borell 1931, Clifton 1960, Maser 1966, Gillesberg and Carey 1991, Forsman et al. 2009b).

Red tree voles were rated as highly vulnerable to local extirpation due to habitat fragmentation or loss (Huff et al. 1992). Several studies indicated tree voles are associated with old forests (Corn and Bury 1986, Dunk and Hawley 2009), but they also occur in younger forests (Jewett 1920, Howell 1926, Clifton 1960, Maser 1966, Thompson and Diller 2002, Swingle and Forsman 2009). Tree vole populations have probably declined in many parts of their range as a result of logging, fire, and forest conversion to agriculture and rural development. In Oregon, they are uncommon or absent in most of the northern Coast Ranges and northern Cascades, where large areas of old forest have been repeatedly logged or burned during the last century (Wimberly and Ohmann 2004). Although significant steps have been taken to protect tree vole habitat on federal lands, Huff et al. (1992) predicted that the tree vole population will continue to decline in the future as old forests are harvested or burned, and rural areas are converted to housing developments or agricultural crops.

Many biologists who have studied tree voles have noted that their nests tend to occur in clumps on the landscape (e.g., Howell 1926, Maser 1998). Signs of their presence range from areas with many nests in a single stand to stands in which only a few nests can be found (Forsman et al. 2009a).

Abundance and Distribution of Red Tree Voles in the Planning Area

The Jumping Bean (JB) planning area is just north of the town of Grants Pass in southwestern Oregon. The JB planning area is within the larger Jumpoff Joe (JOJ) 5th field watershed and is in the Xeric Survey Zone for RTVs (map 1). The BLM

administers 21,504 acres of land (31%) within the Jumpoff Joe watershed; the remaining 48,175 acres (69%) are non-federal lands (Table 28). The dominant NWFP Land Use Allocation (LUA) of the federal lands in the JOJ watershed is Matrix (13,320 acres, 62%). Approximately 7,863 acres (37%) are in a reserve allocation (for the purposes of this analysis, the term "reserve allocations" refers to combined total of all 100 acre NWFP Spotted Owl Cores and the approximated extent of the Riparian Reserves within the Jumpoff Joe watershed; there are no other reserve land allocations within the JOJ watershed besides these two). Of the BLM administered lands, approximately 14,117 acres (66%) currently function as RTV habitat, using a stand age of 80 years or older as a simplistic measure of functional RTV habitat, and approximately 18,960 acres (88%) are classified as "habitat capable" (capable of supporting sufficient tree species and densities to meet the minimum habitat requirements for RTVs based on GIS analysis of vegetation condition classifications).

Table 28: Watershed Conditions and RTV survey acres in the Jumpoff Joe Watershed

Watershed Attributes	Jumpoff Joe 5th Field Watershed
Total Watershed Area	69,679 acres
Federal Land in Watershed	21,504 acres
Reserved Federal Land[1]	7,863 acres
Acres Surveyed for RTV in Watershed[2]	5,727 acres (3,900 in Matrix, 1,827 in Reserve)

1. Includes all 100 acre NSO cores (Unmapped Late-Successional Reserves), and an approximated extent of Riparian Reserve (RR) allocation.

2. GeoBOB data accessed 11/13/2012. Data came from the RTV_SURVEY_POLY data layer, which has the most complete dataset to show the distribution of pre-disturbance surveys, strategic surveys, and other research efforts.

Approximately 27% of the federally administered lands within the Jumpoff Joe watershed have been surveyed for RTV presence. About 68% of these surveys occurred on lands under the Matrix LUA, whereas 32% occurred in reserve allocations (see Table 28). Approximately 69% of the units that comprise the Jumping Bean Project have been surveyed; the entirety of the project was not surveyed as some of the proposed treatments are 1) exempt from survey requirements (fuel hazard reduction treatments), or 2) proposed in locations that do not have sufficient habitat characteristics to trigger pre-disturbance surveys. Map 2 illustrates graphically the above described ownership patterns, land use allocations and RTV survey areas within the JOJ watershed. As seen on Map 2, the RTV surveys that have occurred within the JOJ watershed are relatively well distributed throughout the watershed.

Table 29 displays the number and activity status of all RTV nests found through surveys conducted across the JOJ watershed and what LUA the nests were found in. These results are compiled from all survey efforts that have occurred within the JOJ watershed, including those conducted as pre-disturbance surveys as part of the Jumping Bean planning effort (2011 and 2012) as well as surveys conducted in previous years (2000,

2001, 2007) for various land management projects that have been planned within the JOJ watershed.

In total, 417 RTV nests have been located within the JOJ watershed. Detection rates between the matrix and reserve allocations are very similar, with a "detection rate" (# of RTV nests found/acres surveyed) of 7.1% and 7.7% within survey areas in each LUA, respectively. Similarly, detection rates for active and assumed active RTV nests were very close across the matrix and reserve allocations, with an "active detection rate" (# of active or assumed active RTV nests/acres surveyed) of 4.1% and 4.4% within survey areas in each LUA, respectively. These detection rates indicate that there is little difference between the densities of RTV nests and the percentage of active nests in the Matrix LUA compared to the Reserve LUAs within the JOJ watershed, and suggest that there is no significant difference in the general habitat quality for RTVs between the Matrix and Reserve LUAs within the JOJ watershed.

Table 29: Number of RTV nests and sites found in the Jumpoff Joe Watershed by LUA

Nest Status[3]	Matrix	Reserve	Total
Active	104	49	153
Inactive	116	61	177
RTV - Status Und.[4]	56	31	87
Total	276	141	**417**
Approximate Number of Sites[5]	77	37	**114**

3. GeoBOB data accessed 11/13/2012. Data came from the RTV_TREES_PT data layer, which has the most complete dataset to show distribution of voles across landscape and includes data from pre-disturbance surveys, strategic surveys, and other research efforts. Individual trees were assessed as having active, inactive, or unknown status nest structures.

4. A confirmed red tree vole nest where the occupancy status was not determined. Nests classified as red tree vole, "status undetermined", are to be managed as if they are "active".

5. Approximated number of red tree vole sites from all existing data sources based on nest locations within 100 meters of adjacent nests or clusters of nests and at least one active nest or assumed active nest.

In total, 114 individual RTV sites have been identified within the JOJ watershed. For the purposes of this analysis, each site was extrapolated from the existing tree data because the site layer in the GEObob database was not uniformly populated. Sites were determined following the methodology outlined in the RTV management recommendations (USDA USDI 2000). The average number of RTV nests in each site in the JOJ watershed is 3.17 nests, with a range from one to 28 nests per site. Map 3 illustrates the location and activity status of the RTV nests found from surveys within the JOJ watershed. These survey results indicate RTVs are relatively well distributed throughout the watershed (Map 3). Very little survey effort has been completed in the central portion of the JOJ watershed near interstate 5 as this area is mostly lower elevation valley lands with little RTV habitat.

Description of Sites Considered for Non-High Priority Status

Of the 114 sites currently known to exist across the JOJ watershed, the GPRA proposes to designate three sites as Non-High Priority (NHP). Map 3 illustrates the location of each site considered for NHP status as a numbered point on the map (1, 2, or 3). Map 3 is presented at a scale that depicts the distribution of all known RTV nests and sites across the JOJ watershed in relation to the sites that are being considered for NHP status. Further site specific information and maps relevant to each site being considered for NHP status are included below.

These three sites identified for consideration as NHP sites were identified as candidates for release from protection because they contained low numbers of active RTV nests per site in comparison to other sites across the JOJ watershed. As these three sites identified for NHP status have low numbers of active nests and are generally isolated from larger concentrations of active nests, we assume the comparative importance of these sites is relatively low if nest density is an indication of habitat quality for this species.

NHP site 1

This site is composed of a single active RTV nest. Map 4 displays the biophysical settings, LUAs, adjacent RTV nests, sites and habitat areas, and proposed treatment areas surrounding this site. The habitat conditions for RTVs surrounding this site are considered low to moderate quality. The habitat was typed as dispersal habitat for the Northern Spotted owl, and the age of the stand ranges between 100 and 120. Approximately 5 acres of the 10 acre habitat area associated with this site are proposed for variable density thinning (VDT).

A large population of RTVs was found within < 1 mile to the south of this site, including 7 active nests, 6 inactive nests and 3 RTV nests of undetermined status (assumed active). All of these RTV nests will be managed in accordance with current management recommendations (i.e. as high-priority sites).

NHP site 2

This site is composed of a single active RTV nest. Map 5 displays the biophysical settings, LUAs, adjacent RTV nests, sites and habitat areas, and proposed treatment areas surrounding this site. The habitat area associated with this site is merged into one large habitat area that is shared with an adjacent site (NHP site 3). Habitat conditions surrounding this site include some relatively homogeneous dense stands of Douglas-fir in stem exclusion on the west facing slopes as well as some areas of more mature mixed pine and Douglas-fir stands on the south facing aspects. The habitat was typed as Nesting, Roosting and Foraging for the Northern Spotted owl, and the age of the stand ranges between 120 and 160. The entirety of this habitat area is proposed for VDT as part of the jumping Bean project.

A large population of RTVs was found within 1 mile to the southeast of this site, including 13 active nests, 8 inactive nests and 3 RTV nests of undetermined status (assumed active). All of these RTV nests will be managed in accordance with current

management recommendations (USDA USDI 2000). A large (>100 acres) un-surveyed reserve area which would remain unmanaged is within a ½ mile of this site that is likely occupied by RTVs given the habitat conditions present within this reserve area.

NHP site 3

This site is composed of one active RTV nest and two inactive RTV nests. Map 5 displays the biophysical settings, LUAs, adjacent RTV nests, sites and habitat areas, and proposed treatment areas surrounding this site. The habitat area associated with this site is merged into one large habitat area that is shared with an adjacent site (NHP site 2). Habitat conditions surrounding this site are similar to those described above for NHP site 2. The entirety of this habitat area is proposed for VDT as part of the jumping Bean project.

A large population of RTVs was found within 1 mile to the southeast of this site, As described above. All of these RTV nests will be managed in accordance with current management recommendations (USDA USDI 2000). A large (>100 acres) un-surveyed reserve area which would remain unmanaged is within 0.5 miles of this site that is likely occupied by RTVs given the habitat conditions present within this reserve area.

Determination of Concern for Species Persistence within the Analysis Area

Following Survey and Manage Program guidance, the designation of a Non-High Priority (NHP) site must comply with most of the criteria indicating little to no concern for persistence of the species at the scale of the analysis unit (i.e. the fifth field watershed). The four criteria that must be addressed are outlined in the NHP site process (USDA USDI 2012) and are listed as follows:

1) Moderate-to-High number of likely extant sites/records;
2) High proportion of sites and habitat in reserve land allocations; or limited number of sites within reserves, but the proportion or amount of potential habitat within reserves is high and there is a high probability that the habitat is occupied;
3) Sites are relatively well distributed within the species range;
4) Matrix Standards and Guidelines or other elements of the Northwest Forest Plan provide a reasonable assurance of species persistence.

For this analysis, each criterion is examined separately in the context of this project (Jumping Bean) and the composition of the analysis area, in this case the JOJ watershed.

1) Moderate-to-High number of likely extant sites/records

As described above, there are a total of 417 RTV nests of varying activity status that have been found within the JOJ watershed through protocol surveys and incidental observations. As described above, detection rates were relatively consistent between Matrix and Reserve LUAs, indicating it would be valid to assume there would not be significant differences in detection rates within each LUA in un-surveyed habitat. In total, only about 30% of the RTV habitat capable BLM lands within the JOJ watershed have been surveyed for RTVs. Considering the number of known sites within the

watershed and less than $^{1}/_{3}$ of the habitat capable BLM lands within the JOJ watershed have been surveyed for RTVs, it is reasonable to assume that many more RTV nests are present in the watershed in un-surveyed locations.
Table 30 shows a comparison of the number of RTV nests found within the JOJ watershed in comparison to four other randomly selected 5th field watersheds that are entirely within the Xeric RTV Survey Zone and are composed of predominately BLM ownership. Although survey efforts within each watershed have not been equal, using "detection rate" (the number of all RTV nests found divided by the number of acres surveyed per watershed) gives a figure that is comparable across watersheds. The JOJ watershed has the highest detection rate of any of these five watersheds.

Table 30: Comparison of number of acres surveyed and RTV nests found in five 5th field watersheds within the Xeric RTV Survey Zone

Watershed Name	Acres Surveyed	Total RTV nests	Detection Rate
Deer Creek	5,585	381	6.8%
Evans Creek	6,751	304	5.4%
Hellgate Canyon-Rogue River	4,465	313	5.6%
Jump-off Joe	**5,727**	**417**	**7.3%**
Williams Creek	837	7	0.1%

Considering the high detection rate within the JOJ watershed and the potential for many more RTV nests to be present in un-surveyed locations, it is reasonable to assume that the JOJ watershed contains at least a moderate number, if not a high number of RTV sites. Therefore, this criterion is met within the JOJ watershed.

2) High proportion of sites and habitat in reserve land allocations; or limited number of sites within reserves but the proportion or amount of potential habitat within reserves is high and there is a high probability that the habitat is occupied.

As described above, there are approximately 21,504 acres of federal lands within the JOJ watershed, and about 37% of these lands (7,863 acres) lie within reserve allocations from the Northwest Forest Plan (100 acre NSO cores and Riparian Reserve). Approximately 66% (14,117 acres) of the federal lands in the watershed are in Late-Successional or Old-Growth forest (LSOG) conditions (>80 years old) as defined by the Medford District RMP (USDI BLM 1995). These older forest stands are distributed throughout the JOJ watershed. Approximately 5,196 acres (37%) percent of these LSOG stands lie within the reserve allocations and are not subject to intensive timber harvest, in accordance with the Medford District RMP (1995). There are approximately 8,921 acres (63%) of LSOG forest on BLM lands that are designated as Matrix lands. Although 63% of the LSOG forest stands are located on Matrix LUA, not all of these lands are accessible for harvest due to access constraints (no legal access, economic unfeasibility, logistical constraints, etc.) so the actual amount of ground available to commercial harvest is far less than 8,921 acres.

Given the amount and distribution of reserve allocations and RTV detections within the JOJ watershed, the amount of habitat in reserve LUAs is low to moderate. However, considering the high density of RTVs within the watershed, and comparable detection rates across LUAs, the release of three sites from protection would have negligible impacts on the species persistence within the JOJ watershed as substantial habitat (in both Matrix and Reserve LUAs) would remain throughout the watershed and all other known and un-surveyed RTV sites would be managed as high-priority sites in accordance with current management recommendations (USDA USDI 2000).

3) Sites are relatively well distributed within the species range.

Although the federally administered lands within the JOJ watershed are arranged in a mostly "checkerboard" arrangement, a fair amount (37%) of these lands are in reserve allocations (riparian reserves) which will provide a network of untreated areas to provide connectivity among populations of RTVs within the watershed. The VDT proposed to occur within the three sites included for NHP site designation will not eliminate connectivity between populations, but would likely reduce the quality of the habitat connectivity in these areas until the habitat recovers in these thinned areas (15-20 years). However, connectivity among all other existing sites within the watershed would be maintained to the current extent, given the limitations of the federal land arrangement in the JOJ watershed.

As shown on map 3, there have been 417 RTV nests of varying activity status found across surveyed areas within the JOJ watershed. Only about 30% of the habitat capable lands within the JOJ watershed have been surveyed for RTV presence. Considering 66% of the lands within the JOJ watershed are considered LSOG and detection rates for RTVs are very high within the JOJ watershed, it is highly likely that a substantial number of undiscovered RTV nests are distributed throughout the JOJ watershed in addition to the known locations. Based on the assessment of conditions within the JOJ watershed and the current known distribution of RTV nests and sites across the JOJ watershed, RTVs appear to be well distributed such that this criterion is met.

4) Matrix Standards and Guidelines or other elements of the Northwest Forest Plan provide a reasonable assurance of species persistence.

The RTV is currently considered a category C species under the Survey and Manage Standards and Guidelines (USDA USDI 2001, USDA USDI 2011). As such, pre-disturbance surveys are required prior to habitat modifying activities and all known sites are managed as high-priority sites unless administrative units complete non-high priority site analyses demonstrating sufficient rationale to identify sites as not needed for species persistence. Given the status of the RTV as a category C species under the Survey and Manage program, the current designation under the NWFP should provide a reasonable assurance of species persistence.

Management of RTV sites within the JOJ watershed

There are currently 114 known RTV sites within the JOJ watershed. Of these 114 known sites, all but three (111) would be managed as high priority sites in accordance with the current management recommendations for the RTV (USDA USDI 2000). Within the

three sites that are identified as NHP, variable density thinning (VDT) treatments would occur through the site and the larger stand where the sites are located. For NHP site 1, approximately five acres of the habitat area associated with this site would be thinned and the remaining five acres of the habitat area would remain untreated. For NHP sites 2 and 3, VDT would occur throughout the entire habitat area associated with these sites. The VDT treatments would either thin these stands to an average of 40% canopy cover within NHP site 2, and 60% canopy cover within NHP site 3.

In all cases where thinning would occur within RTV sites, the trees that contain active RTV nests would be reserved from harvest and efforts would be made during layout and tree marking to provide continuous canopy connections to at least one adjacent tree where possible. The VDT prescription utilizes a system of small (¼ to ½ acre) "skips" and "gaps" (pockets of unthinned areas and small group openings, respectively) that will be arranged throughout the treatment area and efforts would be made to place skip areas around the active RTV nests where it does not retard logging feasibility, which would provide additional untreated habitat, albeit smaller than full implementation of ≥10 acre habitat areas.

The VDT proposed to occur within the three RTV sites identified for NHP status will reduce habitat quality in these select areas in the short term. However, these VDT treatments are expected to improve habitat quality in these stands in the long term (>15 years) by accelerating the development of relatively homogeneous stands towards late-successional habitat faster than if the stands were left untreated (Hayes et al., 1997). A large number of known active and inactive RTV nests and sites will remain throughout the JOJ watershed and will be protected from adverse impacts in accordance with current management guidelines. The thinning of these three RTV sites is expected to have negligible impacts to the RTV populations within the JOJ watershed as a whole and overall persistence of this species within the watershed.

SUMMARY

On April 4th, 2013, the Grants Pass Resource Area received a letter of concurrence (Tails#01EOFW00-2013-TA-0114) to designate three RTV sites as Non-High Priority (NHP) sites within the Jumpoff Joe (JOJ) 5th field watershed. The designation of these three RTV sites as NHP will still meet the persistence objectives for this species within the JOJ 5th field watershed, as well as maintain the interconnections with adjacent watersheds. RTV surveys have been completed across approximately 30% of the RTV habitat capable federal lands within the JOJ watershed, resulting in the detection of 417 RTV nests of varying activity status and 114 known sites. Of these 114 known sites, all but three (111) will be managed as high priority sites in accordance with the current management recommendations for the RTV (USDA USDI 2000) provided the acceptance of this proposal.

An analysis of the existing survey data, ownership patterns and Land Use Allocations suggests the designation of these three RTV sites as NHP would comply with most of the criteria indicating little to no concern for persistence of the species at the scale of the analysis unit, in this case the JOJ watershed. The release of these three RTV sites from full management recommendations and the subsequently planned variable density

thinning within these sites is expected to have negligible impacts to the RTV populations within the JOJ watershed as a whole and overall persistence of this species within the watershed.

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LIST OF ATTACHMENTS

Figure 11- Map 1 – Location of the Jumpoff Joe Watershed within the Medford BLM District and the State of Oregon.
Figure 12 - Map 2 – Land Use Allocations and RTV Survey Areas within the Jumpoff Joe Watershed.
Figure 13 - Map 3 – RTV Activity Status and Nest Distribution within the Jumpoff Joe Watershed.
Figure 14 - Map 4 – RTV Site Proposed for Non-High Priority Status Including Adjacent RTV Detections and Treatment Areas.
Figure 15 - Map 5 – RTV Sites Proposed for Non-High Priority Status Including Adjacent RTV Detections and Treatment Areas.

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Figure 11: Jumpoff Joe Watershed within Medford BLM and State of Oregon

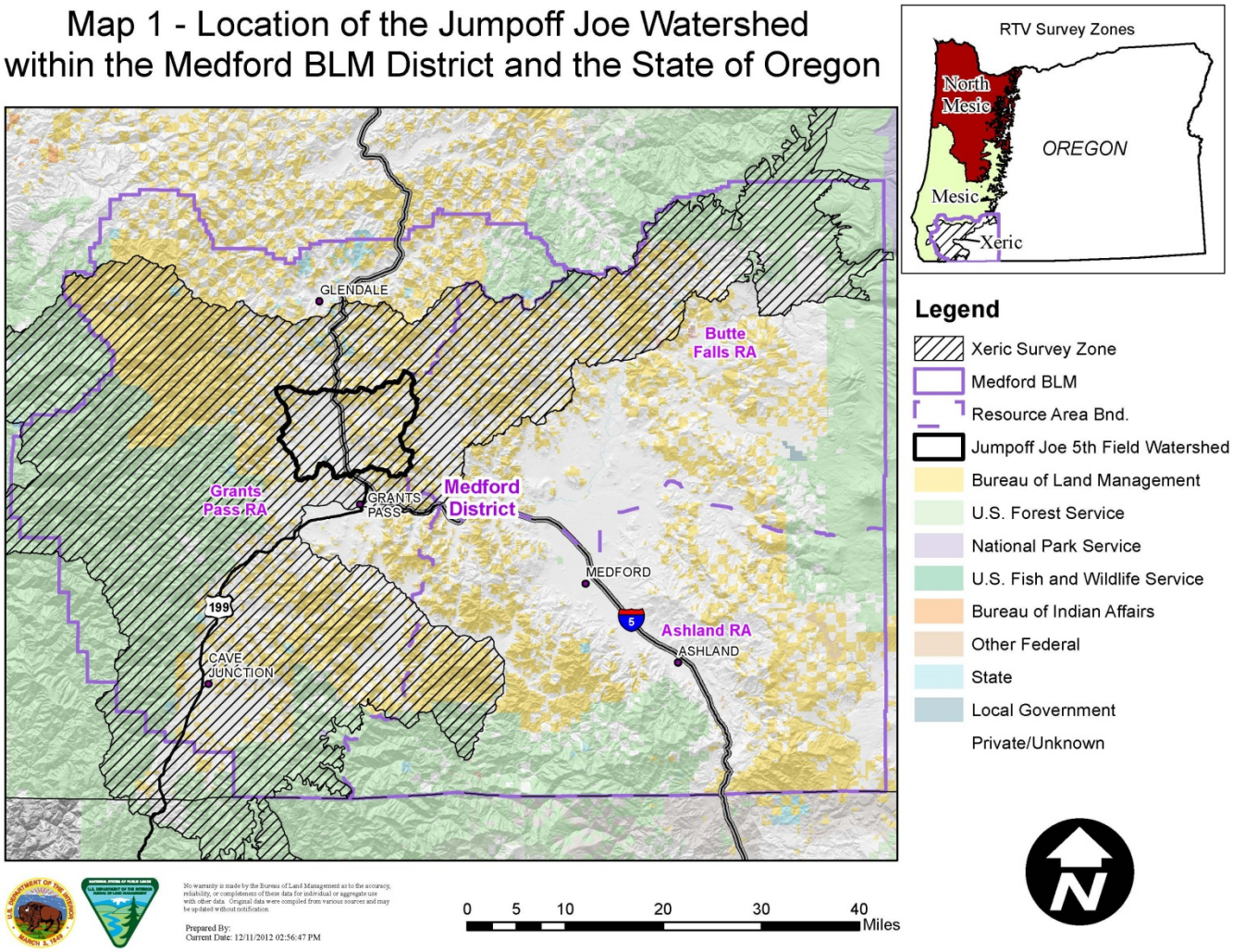

Figure 12: Land Use Allocations and RTV Survey Areas within the Jumpoff Joe Watershed

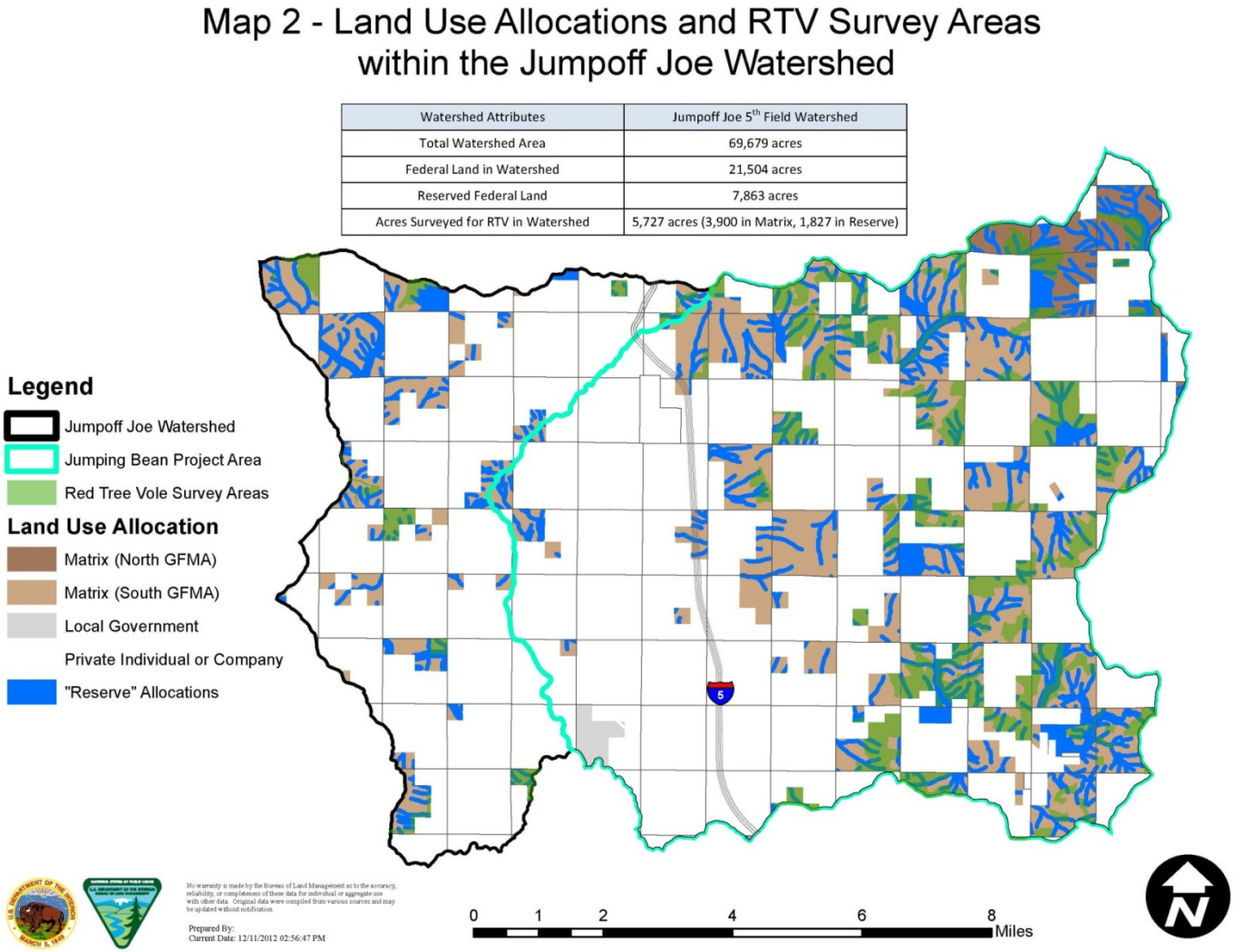

Figure 13: RTV Activity Status and Nest Distribution within the Jumpoff Joe Watershed

Map 3 - RTV Activity Status and Nest Distribution within the Jumpoff Joe Watershed

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RTV - Status Und.	56	31	87
Total	276	141	**417**
Approximate Number of Sites	77	37	**114**

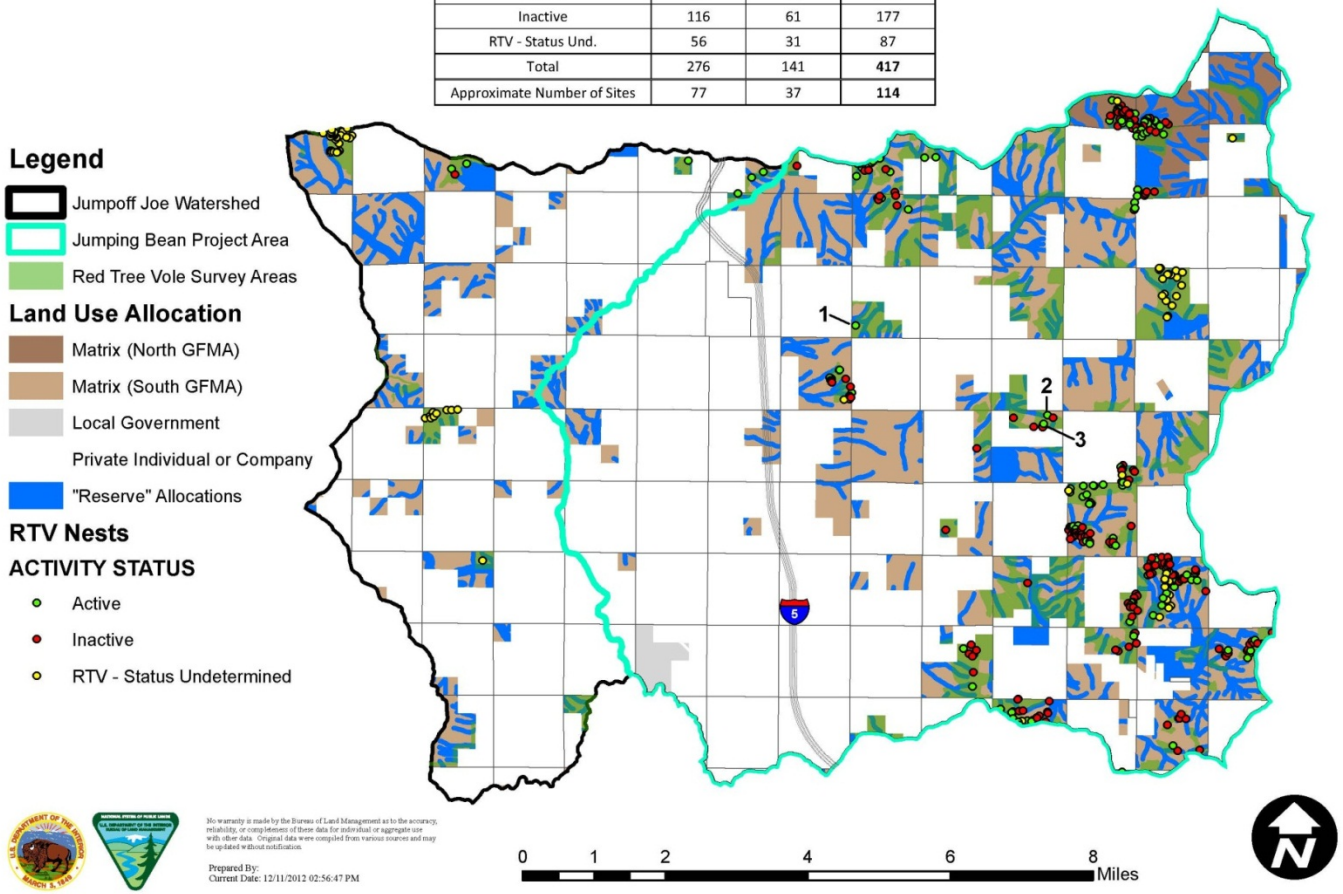


Figure 14: RTV Site Proposed for Non-High Priority Status Including Adjacent RTV Detections and Treatment Areas

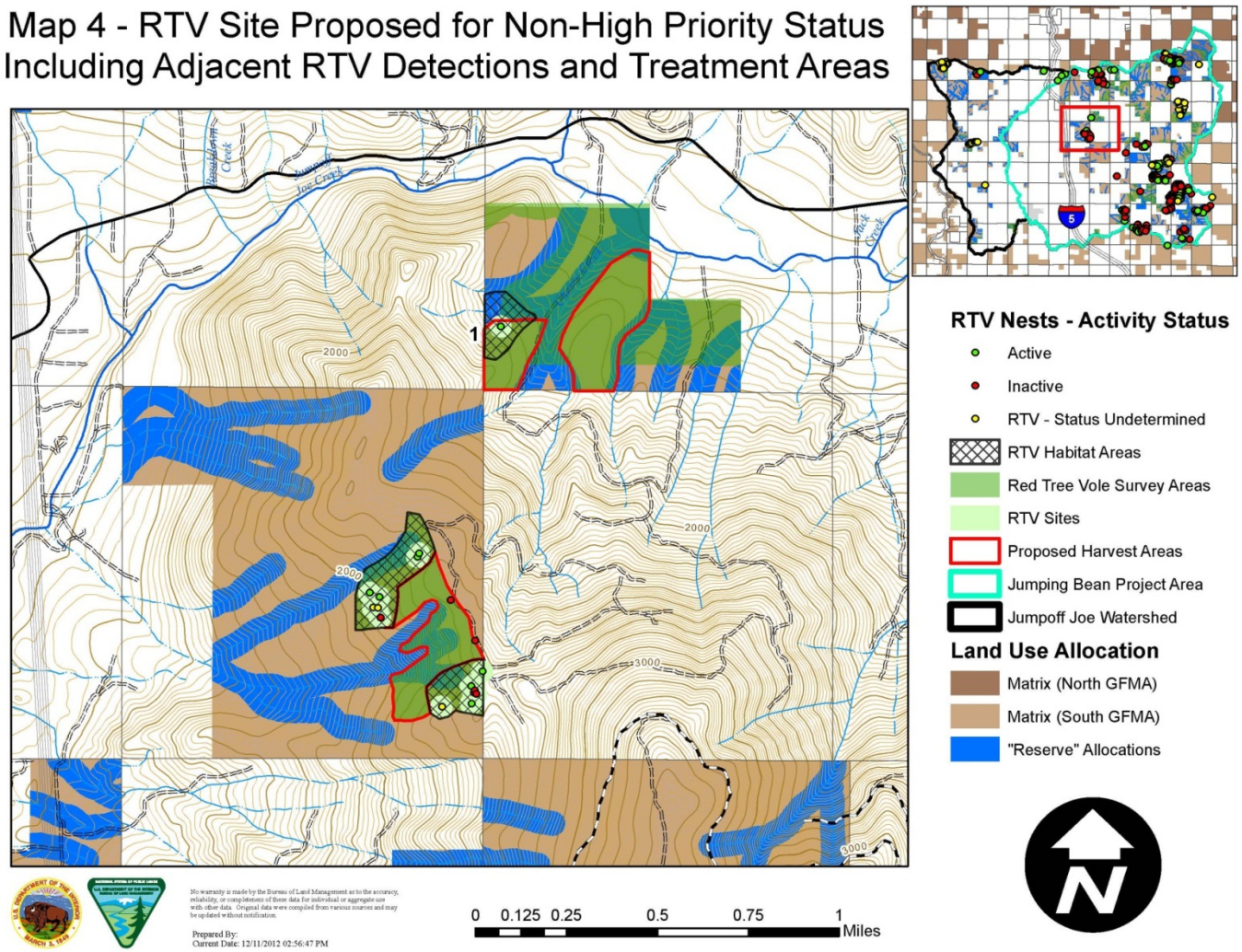
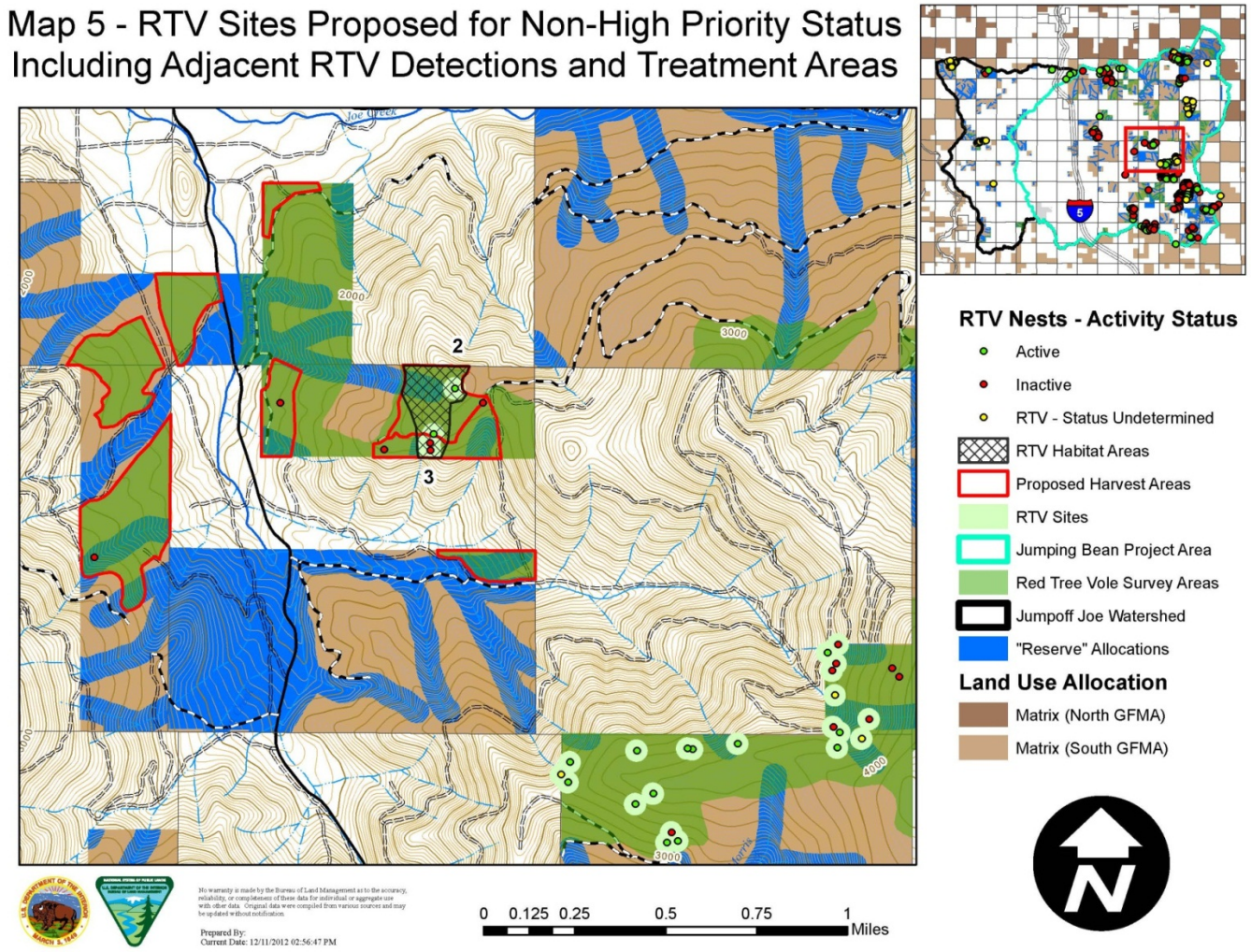


Figure 15: RTV Sites Designated for Non-High Priority Status



APPENDIX 12 - REFERENCES

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APPENDIX 13 GLOSSARY

Activity Fuels – slash created from timber and vegetative cutting. To reduce the full loading, activity slash within units may be machine or hand pile/burned, chipped, or lopped and scattered based on a post-logging assessment of fuel loading.

Adaptive Management Area – Designation under the Northwest Forest Plan. Landscape units designated for development and testing of technical and social approaches to achieving desired ecological, economic, and other social objectives.

Air Quality - Refers to standards for various classes of land as designated by the Clean Air Act, P.L. 88-206, Jan. 1978.

Authorized Officer – BLM employee delegated the authority to oversee timber sale contract administration.

Basal Area - The area of the cross section of a tree trunk near its base, usually at $4^1/_2$ ft above the ground. Basal area is a way to measure how much of a site is occupied by trees. The term basal area is often used to describe the collectiive basal area of trees per acre.

Best Management Practices (BMP) - Practices determined by the resource professional to be the most effective and practicable means of preventing or reducing the amount of water pollution generated by non-point sources; used to meet water quality goals (See Appendix D in RMP (USDI BLM 1995)).

Biological Assessment (BA) - Document prepared by or under the direction of BLM concerning listed and proposed species and designated and proposed critical habitat that may be present in a project area(s) and contains the BLM's determination of potential effects of the action on such species and habitat. Biological assessments are required for formal consultations and conferences on "major construction projects." They are recommended for all formal consultations and formal conferences and many informal consultations where a written evaluation of the effects of an action on listed or proposed species and on designated or proposed critical habitat is needed.

Biological Opinion (BO) – An opinion by the U.S. Fish and Wildlife Service or the National Oceanic Atmospheric Administration as to whether or not a federal action is likely or not likely to jeopardize the continued existence of listed species, or would result in the destruction of or adverse modification of critical habitat. The opinion may contain reasonable and prudent alternatives, a statement of anticipated take of listed species and conservation recommendations for listed species.

Biomass Removal/Utilization - Removes slashed wood or woody fiber by-products that result from forest and woodland restoration, thinning activities, and fuel treatments to be applied towards bio-energy use and/or products manufactured from material such as posts, poles, and firewood.

Cable yarding - Removes logs by use of wire cable(s) and tower for full or partial suspension log removal from harvest units.

Canopy - More or less continuous cover of branches and foliage formed collectively by adjacent trees and other woody species in a forest stand in the overstory.

Climate Change – Any significant change in measures of climate (such as temperature, precipitation, or wind) lasting for an extended period (decades or longer). Climate change may result from:

- natural factors, such as changes in the sun's intensity or slow changes in the Earth's orbit around the sun;
- natural processes within the climate system (e.g. changes in ocean circulation);
- human activities that change the atmosphere's composition (e.g. through burning fossil fuels) and the land surface (e.g. deforestation, reforestation, urbanization, desertification, etc.) (EPA 2010).

Coarse Woody Debris - Portion of trees that have fallen or been cut and left in the woods. Usually refers to pieces at least 20 inches in diameter.

Compaction - Refers to soil becoming consolidated by the effects of surface pressure often from heavy machinery or vehicle and pedestrian traffic.

Critical Habitat Unit - Under the Endangered Species Act, (1) the specific areas within the geographic area occupied by a federally listed species on which are found physical and biological features essential to the conservation of the species, and that may require special management considerations or protection; and (2) specific areas outside the geographic area occupied by a listed species when it is determined that such areas are essential for the conservation of the species. The Proposed Action is in Critical Habitat Unit (CHU) for the Northern Spotted Owl: the revised CHU (2008; Federal Register (73): 47326-47522), as designated by the U.S. Fish and Wildlife Service and the U.S. Fish and Wildlife Service's proposed 2012 CHU. The entire Planning Area is located in an Elk Management Area (RMP 1995).

Cultural Resources - A cultural resource is any definite location or object of past human activity, occupation, or use identifiable through inventory, historical documentation, or oral evidence. Cultural resources can be divided into archaeological, building and structural, and traditional resources.

Cumulative Effect - The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can also result from individually minor, but collectively significant actions taking place over a period of time.

Deferred Watershed – These areas are identified under the Medford District RMP to be deferred from timber harvest due to high watershed cumulative effects from management

activities, including timber harvest and other surface-disturbing activities for ten years, starting from January 1993.
Portions of the Jumping Bean Ecological Forestry Project Planning Area are located within two watersheds deferred in 1995 Medford District RMP: Upper Louse Creek and Upper Jumpoff Joe Creek Watersheds. Since that time, restoration treatments were implemented that were designed to reduce erosion, sediment, and cumulative impacts within these watersheds (Joe-Louse EA, 2006). Following these treatments, these watersheds were re-analyzed in the Joe-Louse Watershed Deferral Status Report (July, 2007), and are consistent with IM # OR110-2006-024 they were subsequently removed from deferral status. Treatments proposed in this project are designed to be consistent with the special management practices that were recommended within the Joe-Louse Watershed Deferral Status Report.

Diameter at Breast Height (dbh) - The diameter of a tree 4.5 feet above the ground on the uphill side of the tree.

Dispersal Habitat - Forested habitat greater than 40 years old, with canopy closure at least 40%, with average diameters greater than 11 inches and that has flying space for owls in the understory. It provides temporary shelter for owls moving through the area between suitable habitat and may offer some opportunities for owls to find prey, but does not provide all of the requirements to support an owl throughout its life. This habitat type has adequate cover to facilitate movement between blocks of suitable NRF habitat.

Drainage - In this document the term refers to the entire area that contributes water to a drainage system or stream at the seventh-field watershed scale (HUC 7).

Effects (or Impacts) - Environmental consequences as a result of a proposed action. Effects provide the scientific and analytical basis for comparison of alternatives. Effects might be either direct (caused by the action and occur at the same time and place) or indirect (occurring later in time or at a different location, but are reasonably foreseeable or cumulative results of the action).

Effects and impacts as used in this EA are synonymous. Effects include ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic quality, historic, cultural, economic, social, or healthy effects, whether direct, indirect, or cumulative. Effects might also include those resulting from actions that might have both beneficial and detrimental effects, even if on the balance it appears that the effects would be beneficial.

Elk Management Area – land designation designed to benefit elk. Objectives include maintain target habitat conditions.

Endangered Species - Any species defined through the Endangered Species Act of 1973 as amended, as being in danger of extinction throughout all or a significant portion of its range and published in the Federal Register.

Environmental Assessment (EA) - A statement of the environmental effects of a proposed action and alternatives to it. It is required for major federal actions under

Section 102 of NEPA and is released to the public and other agencies for comment and review. It is a formal document that must follow the requirements of NEPA, CEQ guidelines, and directives of the agency responsible for the project proposal.

Erosion - Detachment or movement of soil or rock fragments by water, wind, ice, or gravity. Accelerated erosion is more rapid than normal, natural, or geologic erosion, primarily resulting from the activities of people, animals, or natural catastrophes.

Evolutionary Significant Unit - The National Marine Fisheries Service (NMFS, NOAA Fisheries) definition is as follows: a population must satisfy two criteria to be considered an ESU: (1) it must be substantially reproductively isolated from other conspecific population units; and (2) it must represent an important component in the evolutionary legacy of a species. 69 Fed. Reg. at 31355

Fire Hazard - The ability of a fire to spread once ignition has occurred. Hazard is rated using a numerical point system for each of the following factors: slope, aspect, position on slope, adjacent fuel model, ladder fuels, and estimated fuel loading. A point summary is then calculated and a rating of high, moderate or low is assigned.

Fire Risk - The probability of ignition. A rating of high, moderate or low is assigned based on the concentration and/or frequency of human presence and on historic lightning occurrence.

Flame length - Distance measured from the tip of the flame to the middle of the flaming zone at the base of the fire. It is measured on a slant when the flames are tilted due to effects of wind and slope (NWCG, 1994).

Floodplain - The lowland and relatively flat area adjoining inland and coastal waters, including, at a minimum, areas that are subject to a 1% or greater chance of flooding in any given year.

Forage - All browse and non-woody plants that are available to livestock or game animals and used for grazing or harvested for feeding.

Forest canopy - Stratum containing the crowns of the tallest vegetation present in the stand, usually above 20 feet in height (NWCG, 1994).

Forb - Any herb other than grass.

Fuels - Combustible wildland vegetative materials present in the forest which potentially contribute to a significant fire hazard.

Fuel Load - Measure of the amount of fuel in a given area, generally expressed in tons per acre (NWCG, 1994).

Fuels Management - Manipulation or reduction of fuels to meet Forest protection and management objectives while preserving and enhancing environmental quality.

Hand pile/burning - Prescribed fire used to remove man-made or natural collections of concentrated woody debris. Generally the fire is hotter than in broadcast burning or underburning.

Historic Property - According to the National Historic Preservation Act, an Historic Property is any prehistoric or historic district,, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places. Historic Properties may include artifacts, records, or traditional cultural properties (TCPs).

Impacts - A spatial or temporal change in the environment caused by human activity**.** See effects.

Indirect Attack - Method of fire suppression in which the fireline is located a considerable distance away from the fire's active edge. Generally employed in the case of fast moving or high intensity fire. The fuel between the control line and the fire's edge is usually backfired, but occasionally the main fire is allowed to burn up to the fireline, depending on conditions (NWCG, 2005).

Indirect effects - Secondary effects which occur in locations other than the initial action or significantly later in time.

Integrated Vegetation Management (IVM) – A systematic, landscape approach to accomplish a variety of stand and vegetation treatments (commercial, non-commercial, and prescribed fire) using a variety of tools (timber sales, stewardship and service contracts) to meet integrated resource objectives developed by multiple disciplines (timber, fuels, silviculture, wildlife, and other natural resource disciplines) to restore structural complexity, compositional diversity, and stand heterogeneity.

Intermittent Stream - Any nonpermanent flowing drainage feature having a definable channel and evidence of scour or deposition. This includes what are sometimes referred to as ephemeral streams if they meet these two criteria.

Legacy Trees – These trees are survivors of previous disturbances, particularly trees much older than 150 years old that show signs of very old age (charcoal on the bark, very large limbs, very wide bark plates on ponderosa pine, and other indicators that the trees were part of the original stand).

Lop & Scatter - scattering of tree limbs and small diameter logs to facilitate its decomposition.

Matrix - Designated under the 1995 Medford District Resource Management Plan, Matrix lands were identified as areas where timber harvesting would occur and comprise approximately 20% of the total 24 million acres of federal lands identified in the Northwest Forest Plan. There are additional management restrictions, such as for Riparian Reserves that overlap Matrix lands and retaining at least 15% of the watershed in late successional forest patches. The desired condition in Matrix lands on the Medford Bureau of Land Management is a patchwork of different aged forests created by thinning

younger forest stands to assure high levels of volume production and regeneration harvesting older forest stands on an approximate 100 year rotation length.

National Environmental Policy Act of 1969 (NEPA) - This law requires the preparation of environmental impact statements for every major Federal Action which causes a significant effect on the quality of the human environment.

Nesting, Roosting, & Foraging Habitat (NRF) – Habitat used by owls for nesting, roosting and foraging and is frequently referred to as "suitable habitat". NRF also functions as dispersal habitat. Suitable habitat in SW Oregon is typified by mixed-conifer habitats, recurrent fire history, patchy habitat components, and has a higher incidence of wood rats, which is a high quality spotted owl prey species. Suitable habitat in southwest Oregon varies greatly. It may consist of somewhat smaller trees and tree species are more diverse within each stand than owl habitat in the northern west-side Oregon BLM districts and national forests. Generally this habitat is at least 80-years of age (depending on stand type and structural condition), includes a moderate to high canopy, is multi-storied and has sufficient snags and down wood to provide for nesting, roosting and foraging owls, and for prey species habitat. The best quality suitable habitat has large old trees (greater than 30 inches in diameter) with cavities, a high incidence of larger trees with various deformities, including mistletoe, large snags, large accumulations of fallen trees and wood on the ground; and flying space (Thomas et al. 1990).

No-Action Alternative - The No-Action alternative is required by regulations implementing the National Environmental Policy Act (NEPA) (40 CFR 1502.14). The No-Action alternative provides a baseline for estimating the effects of other alternatives. When a proposed activity is being evaluated, the No-Action alternative discusses conditions under which current management direction would continue unchanged.

Non-attainment - Failure of a geographical area to attain or maintain compliance with ambient air quality standards.

Noxious Weeds - Rapidly spreading plants that can cause a variety of major ecological or economic impacts to both agriculture and wildland.

Old-Growth Forests - A forest stand usually at least 180-220 years old with moderate to high canopy closure; a multi-layered, multi-species canopy dominated by large overstory trees; high incidence of large trees, some with broken tops and other indications of old and decaying wood (decadence); numerous large snags; and heavy accumulations of wood, including large logs on the ground (RMP, p.109 and NWFP, p.F-4).

Peak Flow - The highest amount of stream or river flow occurring in a year or from a single storm event.

Perennial Streams - Streams that flow continuously throughout the year.

Prescribed Burning - The intentional application of fire to wildland fuels in either their natural or altered state. Burning is conducted under such conditions as to allow the fire to

be confined to a predetermined area and to produce an intensity of heat and rate of spread required to meet planned objectives (e.g., silvicultural, wildlife management, reduction of fuel hazard, etc.).

Recovery Action 32 (RA 32) - The U.S. Fish and Wildlife Service issued a Recovery Plan for the Northern Spotted Owl (NSO) in 2008. Included in the recovery plan are numerous *Recovery Actions.* Recovery Actions are recommendations to guide the activities needed to accomplish the recovery objectives and ultimately lead to delisting of the species. Recovery Action 32 recommends implementation agencies maintain substantially all of the older and more structurally complex multi-layered conifer forests on Federal lands in the Olympic Peninsula, Western Washington Cascades, Western Oregon Cascades, Oregon Coast Range, Oregon and California Klamath, and California Coast Provinces, allowing for other threats, such as fire and insects, to be addressed by restoration management actions. These forests are characterized as having large diameter trees, high amounts of canopy cover, and decadence components such as broken topped live trees, mistletoe, cavities, large snags, and fallen trees.

Rehabilitate -

Relative Density (RD) - measure of a stand's occupied density compared to a theoretical maximum density. RD measures the number of trees per acre independent of site qualities such as light, water, and nutrients and serves as a measure of competition for growing space.

Resource Management Plan (RMP) - A land use plan prepared by the BLM under current regulations in accordance with the Federal Land Policy and Management Act. (See USDI, BLM 1995). The Jumping Bean Ecological Forestry Project is consistent with the Medford District's 1995 RMP. For more details see Section 1.5 of the EA.

Riparian Reserve (RR) - Designated under the 1995 Medford District Resource Management Plan, this land use allocation consists of the stream, the area of the active stream channel, the width of the 100-year floodplain, and the outer edges of the riparian vegetation. Riparian widths vary from one site-potential tree length (at least 100 ft) for seasonal or intermittent streams or up to two site-potential tree lengths (at least 300 ft) for fish bearing streams.

Sediment - Any material carried in suspension by water, which would ultimately settle to the bottom. Sediment has two main sources: from the water channel itself and from disturbed upland sites.

Seral Stages – The series of relatively transitory plant communities that develop during ecological succession from bare ground to the climax state. There are five stages: early, mid-seral, late, mature, and old growth. For a description of each of these stages, see the Medford District BLM RMP, p.112-113.

Slash - The residue on the ground following felling and other silvicultural operations and/or accumulating there as a result of a storm, fire girdling, or poisoning of trees.

Snag - A standing dead tree usually without merchantable value for timber products, but having characteristics of benefit to cavity nesting wildlife species.

Soil Compaction - An increase in bulk density (weight per unit volume) and a decrease in soil porosity resulting from applied loads, vibration, or pressure.

Soil Productivity - Capacity or suitability of a soil for establishment and growth of a specified crop or plant species, primarily through nutrient availability.

Stand - Forest Operational Inventory Unit as tracked in BLM database. An aggregation of trees occupying a specific area and sufficiently uniform in composition, age, arrangement, and condition so that it is distinguishable from the forest in adjoining areas (BLM 1995).

Sub-watershed - In this document the term refers to the area that contributes water to a drainage system or stream. The Project Planning Area (PA) is on lands around the community of Williams, Oregon (see attached Maps 1-3 at the end of the EA). EA Table 1-1 lists the watersheds and sub-watersheds in the Jumping Bean Ecological Forestry Project Planning Area.

Surface Erosion - The detachment and transport of soil particles by wind, water, or gravity. Surface erosion can occur as the loss of soil in a uniform layer (sheet erosion), in many rills or dry rattle.

Threatened Species - Any species of plant or animal which is likely to become endangered within the foreseeable future throughout all or a significant portion of its range, and which has been designated in the Federal Register as such. In addition, some states have declared certain species in their jurisdiction as threatened or endangered.

Tractor yarding – Removes logs from harvest units by use of tracked equipment utilizing full or partial suspension. Tractor equipment can travel by way of rubber tires or tracks.

Traditional Cultural Property - An area that is eligible for inclusion in the National Register of Historic Places because of its association with cultural practices or beliefs of a living community. Traditional Cultural Properties (TCPs) are rooted in that community's history and are important in maintaining the continuing cultural identity of the community.

Understory - Vegetation (trees or shrubs) growing under the canopy formed by taller trees.

Underburning - The use of prescribed fire, most often below an overstory canopy to remove excess forest fuels. Underburning is generally conducted in the spring months and results in a cooler fire than broadcast burning.

Water Quality - The chemical, physical and biological characteristics of water.

Watershed - Entire area that contributes water to a drainage system or stream. The term refers to the fifth-field scale (HUC 5) in this document. The Jumping Bean Ecological Forestry Project Planning Area is contained within a portion of the Jumpoff Joe and Grave Creek fifth field watershed.

Water Yield - The total volume of surface runoff, measured as stream discharge that leaves a sub-watershed area. Increased water yield is primarily a result of reduced evapotranspiration and interception within the watershed, and can persist for one to two decades following harvest activity depending on the rate of vegetative recovery. As forests regenerate, water yields generally decrease to pre-treatment levels within two to three decades.