

PVJ TIMBER SALE
ENVIRONMENTAL ASSESSMENT
EA # OR-014-07-01

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
LAKEVIEW DISTRICT - Klamath Falls Resource Area

ABSTRACT:

The following Environmental Assessment addresses the environmental effects associated with a variety of proposed treatments from the PVJ Timber Sale and Fuels Treatments. Proposed treatments include; commercial timber harvesting, road improvements, riparian habitat restoration, and fuels treatments.

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CHAPTER 1 - INTRODUCTION

The Klamath Falls Resource Area (KFRA) Resource Management Plan (RMP) provides direction for managing lands on the western part of the Bureau of Land Management (Bureau or BLM) Lakeview District. The PVJ Environmental Assessment (EA) will analyze the effects from proposed vegetation treatments and other management actions in and adjacent to the PVJ project area on lands shown in Table 1 and the Location Map (Figure 1). Many of the stands in the proposed PVJ area are designated as the “Matrix” land use allocation and are multi-aged, multiple canopy stands. Many stands proposed for treatment have a residual large tree overstory component of ponderosa pine and Douglas-fir and a dense understory component. Past management practices in the area have included timber harvesting, silvicultural treatments, fire suppression, grazing, and recreation.

Proposed Action

The following activities are included in the Proposed Action (see Chapter 2 for a detailed description):

Matrix vegetation treatments:

- Density Management Thinning - (Commercial Timber Harvest) – Approximately 850 acres
- Fuel reduction (Post Harvest) in the Matrix through prescribed fire, biomass, and thinning – Approximately 1221 acres

Road Treatments:

- Road improvement (resurfacing) - Approximately 1.3 miles
- Spot rocking – Approximately 2.5 miles
- Road renovation (grading & brushing – road maintenance) - Approximately 6.3 miles
- Road decommissioning (blocking) – Approximately 0.6 miles of roads
- Road obliteration - Approximately 2.4 miles
- New road construction – Approximately 0.2 miles

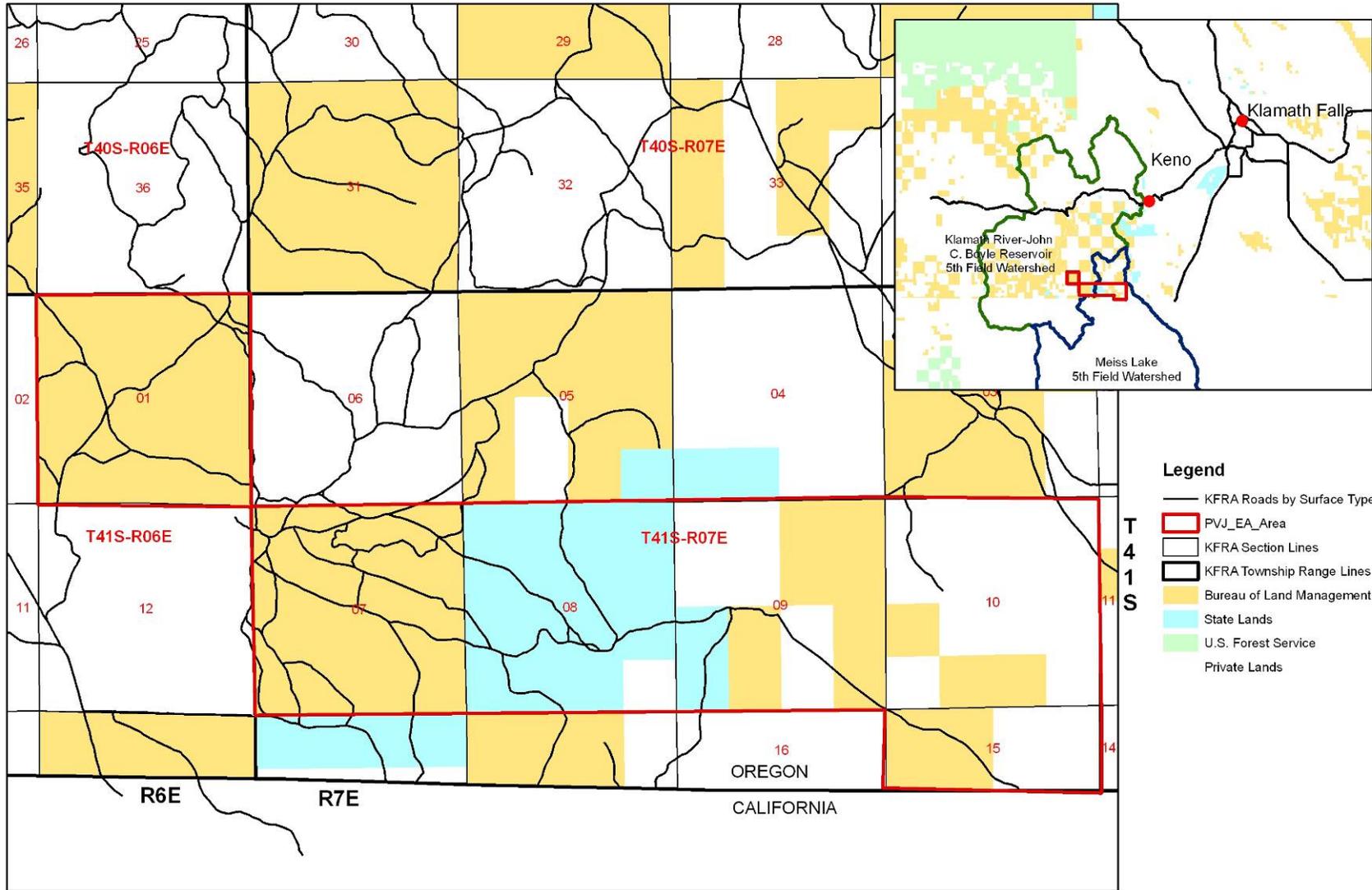
Location

The project area is located south of State Highway 66 and northwest of the town of Dorris, CA. The project area is adjacent to and near the Oregon/California border. (Refer to Table 1: *Location of BLM-administered Lands within the Analysis Area* and Figure 1 – *PVJ Timber Sale EA General Location Map*) All treatments proposed in this environmental assessment would occur exclusively on BLM-administered lands within the Klamath Falls Resource Area.

Table 1: Location of BLM-administered Lands within the Analysis Area

Proposed Treatment Area	Location		
	Township	Range	Sections
PVJ Timber Sale and Fuels Treatments	41S.	7E.	7, 9, 10 & 15
	41S.	6E.	1

Figure 1 – PVJ Timber Sale EA General Location Map



It is hereby certified that the Bureau of Land Management is fully complying with the requirements of the National Environmental Policy Act of 1969, as amended, in the preparation of this report. U.S. Department of the Interior, Bureau of Land Management, Washington, D.C.

General Location Map 5th Field Watershed Scale



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Purpose and Need for Action

Purpose

- Implement actions to meet the objectives of the RMP (discussed below).
- Achieve the desired future condition (discussed below).
- Improve the resiliency of residual trees from drought, insects, and disease.
- Produce a sustainable supply of timber and other forest commodities to support local and regional economies.
- Reduce the wildfire hazard associated with high fuel loading, contiguous fuel arrangement, and stand density.
- Reduce road density in the area while improving the condition of the remaining transportation system.

Need

Field observations and timber stand data show that the existing stands in the project area are presently overstocked, with declining forest health (stand resiliency) and reduced annual growth. Trees within densely stocked stands are more subject to stress and vulnerable to further attack by insects and diseases (Topsy/Pokegama Landscape Analysis pp. 195). (Note: Forest health in this EA is defined as the resiliency of the forest ecosystems to sustain themselves in the process of natural disturbances such as insect outbreaks and wildfires. A more detailed discussion of forest health is in the KFRA 1994 Final Environmental Impact Statement (FEIS), pages 3-63 to 3-66. A more detailed discussion of the specific area can be found in the Topsy/Pokegama Landscape Analysis.)

There is a need to reduce the stocking to improve growing conditions on approximately 1000 acres of dense, overstocked forested stands in the project area.

The lands within the analysis area were identified in the KFRA RMP as being within the Matrix allocation. The Matrix lands have RMP objectives to produce a sustainable supply of timber and other forest commodities as stated in the KFRA RMP and Oregon and California (O&C) Lands Act of 1937, which can be met by removing trees under commercial contract. The proposed PVJ Timber Sale would harvest and sell approximately 1.3 million board feet of timber.

The overstocked stands have excessive surface, ladder, and canopy fuels that result in an increased risk, in terms of greater fire intensity, severity, and resistance to control. There is a need to thin and apply prescribed fire to the timbered stands to reduce wildfire hazard in the forested areas.

Road density is approximately 4.5 miles/square mile which exceeds the RMP objective (1.5 mi/section or less RMP pp. 71). There is a need to reduce the road density in order to benefit wildlife and hydrologic function.

Desired Future Condition and RMP Objectives

Matrix Forest Stands

For Matrix forest stands, the RMP explains in detail the desired future condition and objectives of forested stands in the Matrix (See page 22 and pages E-8 to E-11). In general, the desired future condition of the Matrix forest landscape is a healthy, diverse, and productive forest that is resilient to natural disturbances (disease, drought, insects, and fire) and meets the following objectives:

- Produce a sustainable supply of timber and other forest commodities to provide jobs and contribute to community stability (RMP page 22).
- Provide connectivity (along with other allocations such as Riparian Reserves) across the landscape for forest dependent plant and animal species (RMP page 22).

- Provide habitat for a variety of organisms associated with both late-successional and younger forests (RMP page 22).
- 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 (RMP page 22).

Page E-9 of the RMP discusses target stand conditions that over time would trend towards a forest composed of stands containing a variety of structure, trees of varying sizes and ages, and stands with an assortment of canopy configurations. Desired Species Composition (by percent conifer basal area), shown on Table E-1 of the RMP, is designed to improve stand resiliency. The PVJ Timber Sale silvicultural prescription was developed to meet these desired future conditions.

Fire

- Modify fuel profiles in order to lower the potential of fire ignition and rate of spread; protect and support land use allocation objectives by lowering the risk of high intensity, stand-replacing wildfires; and adhere to smoke management and air quality standards (RMP page 76).
- Reduce hazards through methods such as prescribed burning, mechanical or manual manipulation of forest vegetation and debris, and combinations of these methods (RMP page 76).
- Introduce prescribed fire across large areas over a period of time to create a mosaic of vegetation conditions (RMP page 76).
- Use prescribed fire to manage seral stage diversity through the development of fire resistant vegetation mosaics by timing the application of fire (for example, every five to ten years) (RMP page 76).

Roads

The RMP (pages D-13 to D-21) lists the Best Management Practices (BMPs) and objectives for managing roads in the KFRA. In general, the desired future condition for roads in the analysis area is a transportation system that meets the following objectives:

- Provide suitable transportation facilities for management and recreational use.
- Ensure that the road investment is maintained and that roads and road use are not contributing to resource damage.
- Reduce road densities where feasible.

Environmental Analysis and Decision Process

An interdisciplinary evaluation of the resources in the analysis area including wildlife, recreation, soils, fisheries, timber, cultural, hydrology, as well as other resources is documented in this environmental assessment (EA). The analysis is accomplished by examining the different resources in the analysis area and recommending a course of action that best meets the objectives outlined in the Klamath Falls Resource Area Resource Management Plan. The analysis area can vary in size depending on the different resources.

This Environmental Assessment is tiered to the Final - Klamath Falls Resource Area Resource Management Plan and Environmental Impact Statement, September 1994 (KFRA RMP EIS). The purpose of this EA is to assess the effects of the proposed treatments and to determine if the environmental effects associated with the proposed site-specific treatments are significant and/or greater than those already analyzed in the previous KFRA RMP EIS. If the effects are not significant or greater than analyzed in the KFRA RMP EIS, a Finding of No Significant Impact (FONSI) will be documented upon the completion of the analysis. In addition to providing analysis

to determine whether or not an environmental impact statement is necessary, this EA will provide the public with information about the proposed treatments, describe the alternatives and the associated effects with each alternative, and assist the decision maker in selecting an alternative.

The KFRA Field Manager, as the responsible official, will decide whether or not to implement the Proposed Action and determine whether or not the proposed action is consistent with the RMP as well as other laws and regulations (i.e., the Endangered Species Act and Clean Water Act, etc.). The proposed treatments or projects would span a 3-5 year period. Information obtained from biological surveys and consultation is included in the EA and will also be incorporated in the final Decision Record to this EA.

Public Input Summary and Issue Development

A scoping letter dated January 11, 2007 for the PVJ Timber Sale EA was sent to the resource area timber sale EA mailing list of approximately 150 people. The letter explained the project proposal in general and asked the public for comments. The resource area received comments from three individuals/organizations. The issues and concerns raised were considered in formulation of alternatives (Chapter 2), analysis of the alternatives (Chapter 3) and development of mitigation measures. Issue statements are paraphrased below and responses are provided:

Issue: The combined effects of logging, road construction, and the elimination of timber reserves may require that an EIS be developed for this site.

Response: The PVJ Timber Sale EA analyzes specific actions related to the proposed PVJ Timber Sale and fuels treatments. This EA tiers to the analysis of these types of management actions proposed in the KFRA RMP/EIS. The assessment addresses direct, indirect, and cumulative effects of each action associated with the proposed timber sale and fuel treatments to soils, wildlife, vegetation, hydrology, and other resources. The purpose of preparing an environmental assessment is to determine if an environmental impact statement is needed.

Other actions (See Table 3 in the PVJ Timber Sale EA) will occur on BLM land within the watershed. The analysis of effects of the PVJ Timber Sale will take into account other past, present, and reasonably foreseeable future actions to determine if significant environmental effects would occur. Best Management Practices in the ROD/RMP, Project Design Features provided in Appendix B and the additional mitigation discussed in the EA will be implemented to protect resources and minimize potential environmental effects.

If implementation of the proposed action is consistent with and would result in effects that are no greater than those analyzed in the KFRA RMP/EIS, no significant environmental effects are expected and an additional EIS for the PVJ Timber Sale would not be necessary.

Issue: The coniferous forest mature/old-growth habitat component is being depleted at a rate that is likely irreplaceable over time.

Response: The PVJ Timber Sale EA proposes to implement a Density Management prescription with one of the objectives being to retain late successional stand attributes and structure through uneven-aged management. (See Desired Future Conditions and RMP Objectives, pages 3-4 of this EA). This prescription, the most common prescription used in the KFRA, meets the multiple purposes, needs, and objectives stated in the PVJ Timber Sale EA (pages 1-4) while still addressing the issue of retaining mature/old-growth habitat. Figure 2 below reveals that most of the trees in the

larger diameter classes are to be retained.

In addition, the Northwest Forest Plan Record of Decision (NWFP ROD) addressed the issue of mature/old-growth habitat from the much larger scale (approximately 24,400,000 acres).

Approximately 80% of the Northwest Forest Plan area (See page A-5 of the NWFP ROD) is in some form of reserve with one of its primary objectives to retain mature/old-growth habitat. The Matrix portion (approximately 16%) of the Northwest Forest Plan was allocated for multiple resources including “timber harvest and other silvicultural activities” (See Page C-39 of NWFP ROD). The PVJ Timber Sale and subsequent forest health treatment will occur on Matrix lands (See Table 2 of EA), thereby complying with the NWFP ROD and KFRA RMP.

Issue: There is a great need for small diameter and pre-commercial thinning to open up overstocked stands, and reduce the opportunity for stand replacing wildfire to occur.

Response: The BLM agrees that there is a need for precommercial thinning to reduce overstocked stands, improve forest health, and reduce the risk of stand replacing wildfires (See page 1 of EA, Proposed Action). The KFRA has been addressing this concern for the last several years by incorporating specifications into Timber Sale and Fuel Reduction contracts and/or using Stewardship Contracts to reduce stocking and fuel hazards. Proposed treatment areas are reviewed on a stand by stand basis to determine the best method to address the small diameter material.

In several past timber sale contracts (Chew, Kakapo, Frosty One, Too Frosty, Muddy Tom, Grenada East, and Clover Hookup) the KFRA required the thinning and removal of trees 3”-7” DBH in portions of the sale areas, concurrent with commercial density management thinning. The benefit of this specification in a timber sale contract is that it results in a single entry of mechanical equipment with the capacity to deal with this smaller diameter material. In addition to the thinning and removal of this material, the KFRA has required chipping or grinding of this small diameter material which is primarily destined for biomass and energy production.

The KFRA has also applied prescribed fire to treat small diameter stands. Successfully meeting the numerous objectives is dependent upon multiple variables including implementing the burn within the right burning window to meet hazard-reduction and forest health objectives. The KFRA has determined that in many cases, pretreatment of the overstocked stands is necessary before prescribed fire can be utilized. That is why numerous timber sale EAs including the PVJ Timber Sale EA address an array of treatments including; commercial timber harvesting, mastication, prescribed fire, and precommercial thinning. Piling, by hand or with a small tractor (rubber tracked, 3.8psi ground pressure) has been used to target areas with excessive fuel loading. These piles are burned under moist conditions to remove these fuels from the site.

For the PVJ Timber Sale EA (page 1), the proposal does include implementing an array of these treatments to meet the overall objective of reducing the risk of a stand replacing fire.

Issue: Protect sensitive plants and late successional forest ecosystems from the effects of the exclusion of natural fire processes.

Response: Although the KFRA does suppress wildfires on BLM lands, it also has an aggressive prescribed fire/underburning program to reintroduce fire under prescribed conditions into forested stands where periodic fire occurred as a natural process. The PVJ Timber Sale EA addresses special status plants including threatened and endangered species dependent upon late successional forest

ecosystems in Chapter 3-Affected Environment and Environmental Consequences (pages 13-38).

Issue: Determine a method to protect soil resources from erosion, reduced productivity and compaction caused by increased use (especially by tractor yarding). Examine the specific soil types and their operational vulnerabilities and design a management plan accordingly.

Response: In accordance with BLM policy, Best Management Practices (BMPs) (Appendix B) will be implemented to reduce any negative effects of logging activity. BMPs include minimum spacing between trails, orientation of skid trails, designated crossings through riparian reserves, and avoiding landings in riparian reserves. In addition, harvesting is generally implemented during the summer and fall (generally June-October) when soils are drier and less susceptible to compaction. Specific soil types are described in Chapter 3-Affected Environment and Environmental Consequences (pages 13-38).

Issue: There is an increased chance of noxious plant invasion due to the mechanization of the harvesting process. Use past experience to mitigate these effects.

Response: Project Design Features (PDFs) and Best Management Practices (BMPs) for weed prevention and soil protection have been demonstrated to be effective in reducing the introduction and spread of weeds from past activities. These measures (Appendix B) will continue to be implemented. Cumulative effects on noxious weed introduction and distribution are expected to be minimal.

Issue: Please describe the habitat, surveys and protocols used in the NEPA analysis to comply with S&M protocols.

Response: Please refer to the Special Status Species analysis in this document for more detailed information on this issue.

This EA is consistent with the Northwest Forest Plan, including all plan amendments in effect on the date of the decision. The PVJ EA conforms with the 2007 Record of Decision *To Remove the Survey and Manage Mitigation Measure Standards and Guidelines from Bureau of Land Management Resource Management Plans Within the Range of the Northern Spotted Owl*. The EA analysis tiers to that of the Northwest Forest Plan and supporting environmental impact statements in effect on the date of the decision.

There is no high priority habitat for special status species mollusks (aquatic or terrestrial) within the analysis area. There is no riparian habitat with perennial water within the area therefore no special status mollusk surveys were conducted. There is habitat within the analysis area that met the criteria for potential great gray owl habitat. Surveys were conducted in 2007 and 2008. Although no longer considered a special status species by the BLM, appropriate nest protection and seasonal restrictions would be applied if a nest is located.

Protocols used in field surveys and analysis:

- “Survey Protocol for Survey and Manage Terrestrial Mollusk Species from the Northwest Forest Plan. Version 3.0 (2003)”
- “Survey Protocol for Aquatic Mollusk Species from the Northwest Forest Plan. Version 2.0 (Oct 1997)”

Issue: Protect sensitive status species including Northern goshawks and Northern spotted owls. Discuss nearby LSRs, connectivity in the matrix, NSO recovery plans, and potential “take” from this timber sale.

Response: Please refer to the Special Status Species analysis in this document for more detailed information on this issue.

Northern Goshawks are no longer considered Bureau Sensitive by the BLM. However surveys were conducted in the analysis area for Northern Goshawks. No goshawks were located during these surveys. If a goshawk nest was located during the implementation of the project the BLM would protect the nest site (pp 34, KFRA EIS/RMP) and provide seasonal restrictions during critical periods.

No spotted owls have been documented in the analysis area. No habitat within the analysis area is classified as nesting habitat. The closest nest site is approximately one mile to the north and is currently unoccupied. No direct impacts to spotted owls are anticipated from the proposed action and therefore no take anticipated. Consultation with the U.S. Fish and Wildlife (FWS) is complete and has determined that this action will not adversely affect the Northern spotted owl.

There are no large late successional reserves (LSR) within the planning area. The closest large LSRs are approximately 8.5 miles to the south and 15 miles to the north of the project area. The proposed timber sale would maintain dispersal habitat post harvest where it currently exists and therefore maintain the current connectivity for spotted owls and other wildlife species. No designated critical habitat occurs within the project area.

The proposed action is consistent with the Draft Northern Spotted Owl Recovery Plan (2007). The project does not occur within any of the large LSRs or proposed Managed Owl Core Areas (MOCAs) and would maintain dispersal habitat within the project area.

Issue: High road densities in the area impact the hydrologic functions. Do not build new roads. Close and gate roads, especially off road vehicle routes, to reduce open road density.

Response: The PVJ Forest Health Treatments EA is tiered to the KFRA ROD/RMP which addresses and analyzes in detail: road use, construction, specifications and associated impacts (Appendix D, pages D13-D21). Page 46 (Table 24.1) of the 2005 Klamath Falls Resource Area Annual Program and Monitoring Report summarizes the road and transportation management progress in the KFRA since 1995 when the RMP was signed. There has been a net decrease in permanent existing roads and open roads in the KFRA since 1995 resulting in beneficial effects to wildlife and hydrological resources. Fewer total roads and fewer open roads generally result in decreased potential for sediment to be delivered to streams, decreased potential for water quality to be degraded, and decreased potential for wildlife to be disturbed. This proposed action is designed to further reduce the amount of existing open roads. The new construction of approximately 0.2 mile of permanent road is needed in order reduce yarding distance, thereby protecting soil resources and reducing sedimentation. An additional 2.8 miles of existing road would be decommissioned or obliterated to provide year-around closure.

Issue: Logging and fire suppression have disrupted the natural balance of the forest habitat. This may allow increased mortality due to insect and disease infestation.

Response: Existing forest stands are the product of past influences, including human management over the past 120 years. Logging concentrated on the most economically valuable trees, usually larger sugar pine, ponderosa pine and Douglas fir. Smaller understory trees of these species, as well as white fir, were left uncut. Before human intervention, naturally occurring surface fires maintained much more open understories, and kept fuel levels relatively low. Suppression of these natural fires has resulted in forest stands that are much denser and more prone to bark beetle attack and mortality. Thinning, as proposed, would move these stands toward a more historic structure and species composition by favoring pine and Douglas fir as leave trees (especially larger trees), reducing stand density and reducing ground fuel levels.

Management Direction and Conformance with Existing Plans

This Environmental Assessment (EA) is tiered to the Klamath Falls Resource Area Resource Management Plan and Final Environmental Impact Statement (RMP/FEIS, September 1994) and Record of Decision (ROD, June 2, 1995). Management direction and recommendations for project design and implementation is contained in the RMP and a number of supporting documents listed below:

- Klamath Falls Resource Area Integrated Weed Control Plan EA (July 21, 1993).
- Range Reform FEIS (August 1995).
- Final Environmental Impact Statement, Vegetation Treatment on BLM Lands in Thirteen Western States (1991).
- 2007 Record of Decision To Remove the Survey and Manage Mitigation Measure Standards and Guidelines from Bureau of Land Management Resource Management Plans Within the Range of the Northern Spotted Owl.
- 2004 Record of Decision Amending Resource Management Plans for Seven Bureau of Land Management Districts and Land and Resource Management Plans for Nineteen National Forests Within the Range of the Range of the Northern Spotted Owl – Decision to Clarify Provisions Relating to the Aquatic Conservation Strategy.
- 2001 Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines in Forest Service and Bureau of Land Management Planning Documents within the range of the Northern Spotted Owl.

The Topsy/Pokegama Landscape Analysis (TPLA), prepared in July 1996, provides both historic and current information on the different resources in the watershed and also provides a number of recommendations for resource protection and restoration opportunities.

CHAPTER 2 - PROPOSED ACTION AND ALTERNATIVES

Two alternatives analyzed in this environmental assessment are described below.

Proposed Action

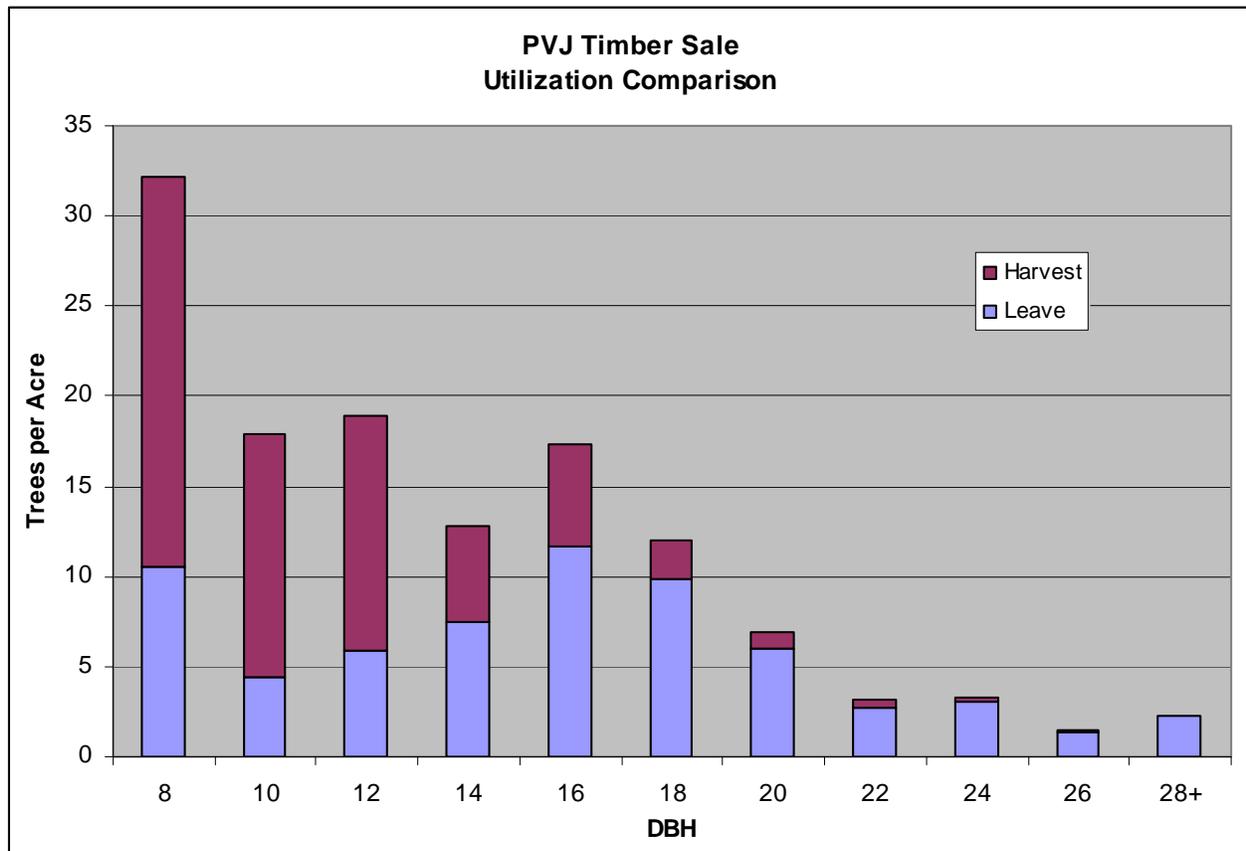
The Proposed Action is designed to meet the purpose and need for the project by improving the health of forested stands, reducing wildfire hazard conditions, and providing a sustainable supply of timber. Table 2 shows the specific design of the Proposed Action. A description of these actions is as follows:

Westside Matrix Forest Lands

Density Management/Variable Density – Density management, including both commercial and precommercial thinning, would occur on approximately 850 acres of westside matrix lands. This

type of harvest would be designed to maintain an uneven-aged, multi-strata stand structure and reduce competition and stress to remaining trees (RMP/ROD, Page 56). Generally, a variable density ranging from 60 to 140 square feet of basal area per acre would be retained in the Density Management Units, averaging 80 to 120 square feet of basal area per acre. Figure 2 below illustrates the approximate stand composition (trees per acre) of various size classes that would remain after treatment (leave trees). Ponderosa pine, Douglas fir and incense cedar will be the highest priority species to be maintained in the residual stand. All invasive juniper (not old-growth) will be removed within the project area. Approximately 2.4 snags per acre would be retained with a minimum diameter at breast height (DBH) of 16”, or largest available if less than 16” (RMP/ROD, Page 26-27).

Figure 2 – Proposed Stand Composition (trees/acre) by Diameter Class after Treatment



Riparian Reserves

This timber sale does not involve any operations near or within riparian reserve areas.

Volume Harvested

In the Matrix, approximately 1.3 million board feet (MMBF) of timber would be harvested in the project area. Appendix B of this EA includes the harvest prescription, project design features, and best management practices for treatment of forested areas.

Fuels Treatment

Upon completion of the Density Management Thinning, the project area will be reviewed to determine if additional fuels treatments are needed. The proposed treatments include: 153 acres of thinning, piling, and burning; 20 acres of pre-commercial thinning, yarding, and burning; and 1,048

acres of application of broadcast prescribed fire (underburn). It is anticipated that prescribed fire would be the only post-harvest fuels treatment necessary. All residual material resulting from mechanical treatment will be considered for utilization.

Roads and Transportation System

The road system in the project area will be improved where necessary and obliterated where possible to reduce total road density (See Table 2).

Best Management Practices (BMPs) described in Appendix D of the RMP and additional Project Design Features (PDFs) specific to the above described activities listed in Appendix B of this analysis will be implemented as part of the Proposed Action. Both the BMPs and PDFs are designed to minimize adverse effects on the natural and human environment, including: vegetation, soils, roads, wildlife, hydrology, cultural, visual, and recreation resources.

Table 2: Detailed Description of the Proposed Action

Project Element	Units Proposed
Westside Matrix Forest Lands	
Silvicultural Prescription: Density Management (commercial & precommercial thinning)	Up to 850 acres
Fuel Reduction: Thinning / Piling / Burning	Approximately 153 acres
Fuel Reduction: Thinning / Yarding / Burning	Approximately 20 acres
Fuel Reduction: Broadcast Prescribed Fire (Underburn)	Approximately 1,048 acres
Road Treatments and Transportation Management	
New Road Construction	Approximately 0.2 miles
Road improvement	Approximately 1.3 miles
Renovation (grading & brushing – road maintenance)	Approximately 6.3 miles
Road closures (Blocking)	Approximately 0.6 miles
Road Obliteration	Approximately 2.4 miles
Spot Rocking	Approximately 2.5 miles
Volume	
Density Management (commercial thinning)	Up to 1.3 MMBF
Biomass Removal	Approximately 1700 tons

No Action Alternative

The No Action alternative proposes no new management activities in the project area. Analysis of this alternative provides a useful baseline for comparison of environmental effects (including cumulative effects) and demonstrates the consequences of not meeting the need for the action. Activities proposed in and adjacent to the analysis area and analyzed in other NEPA documents would still occur such as fuel reduction treatments, routine road maintenance, forest inventory and surveys, and fire suppression. The selection of the No Action alternative would not change land allocations or the direction that the BLM has to manage these lands as Matrix. These lands will likely be considered for similar management in the future based on the RMP, with or without the current proposed action.

Other Alternatives Considered But Not Analyzed In Detail

Fuels Treatment Only Alternative

An alternative was considered that would have analyzed effects of fuels treatments, independent of

density management (pre-commercial thinning, burning, etc), on approximately 1000 acres of the PVJ analysis area. This alternative would not fully meet the land use plan objectives or the purposes and needs for the proposed action; primarily the need to produce a sustainable supply of timber and other forest commodities to support local and regional timber-related businesses.

Restoration Treatments Only Alternative

Another alternative considered was one that would analyze effects of implementing only the restoration treatments from the Proposed Action, primarily road treatments and hazardous fuel reduction treatments (mastication and prescribed burning) with no commercial harvest. This alternative was dropped from further analysis based on the understanding that environmental effects of implementing restoration treatments will be sufficiently discussed in the Proposed Action and that a “Restoration Treatments Only” alternative would not fully meet the land use plan objectives or the purpose and need for the proposed action on Matrix lands.

Citizen Proposed Alternative

As a response to the scoping letter, a commenter expressed concern that the following parameters be considered in the development of the PVJ timber sale plan . Although the response did not include specifics necessary for analysis as a formal alternative, all of the parameters were considered. The parameters submitted were:

Plantations are commercially thinned so as to increase vigor and provide wood fiber to meet the intent of the LRMP and the O&C Act:

- Fuels are reduced in the project area
- No new logging roads are constructed in the watershed
- Existing roads are upgraded
- Road density is reduced
- Small trees in overly dense stands are thinned
- Remaining late-successional forests and large diameter trees (over 20 inches DBH) are retained

Although concern about cutting any large/late seral trees was expressed in public comments, the Resource Area Interdisciplinary Team (IDT) felt that some of the larger trees should be harvested for the following reasons:

- to manage stand densities, in some areas no thinning response would occur without removal of some larger trees,
- to manage overall stand health by removing some larger insect and disease infested trees,
- to maintain an uneven aged stand structure,
- to manipulate species to more accurately reflect historic species composition,
- to provide a sustainable supply of timber to provide jobs and contribute to community stability.

Figure 2 displays that less than 2% of the trees to be cut will be greater than 20 inches DBH. Further discussion of this issue can be found in the previous Public Input Summary and Issue Development section and in the Environmental Consequences of the Proposed Action. Additionally, 0.2 mile of new logging road will be constructed within the watershed. This road is designed to reduce yarding distance to landings and thereby protect soil resources and reduce sedimentation. Total road density within the project area will be reduced by 2.68 miles. Further discussion of this construction can be found in the Environmental Consequences of the Proposed Action.

The remaining parameters are met in the design of the proposed action alternative.

CHAPTER 3 – AFFECTED ENVIRONMENT & ENVIRONMENTAL CONSEQUENCES

Introduction

This chapter summarizes the physical, biological, and socioeconomic environment of the PVJ Forest Health Treatments area and the consequences of the proposed actions. A detailed discussion on the affected environment and environmental consequences can also be found in the Klamath Falls Resource Area RMP/ROD and FEIS (pages 3-3 to 3-79) and the Topsy/Pokegama Landscape Analysis.

The affected environment reflects the existing condition that has developed from all past natural events and management actions within the project area (and/or 5th field watershed). It is a combination of the effects of natural and human caused fires, fire suppression, road building, timber harvesting, grazing, fuel reduction treatments, and recreational use. The current condition assessed for each affected resource is reflective of all those past natural events and management actions. It is therefore unnecessary to individually catalog all past actions in this EA. Such detail would be irrelevant to making a rational decision among alternatives. The important value of this EA is to assess and display for the deciding official the impacts of the alternatives on those resources as they exist today, to allow a determination if the resulting project effects and/or cumulative effects are either significant or are greater than those analyzed in the RMP EIS.

Resource values that are either not present in the project area, or would not be affected by any of the proposed alternatives are: floodplains, wilderness study areas (WSAs), areas of critical environmental concern (ACECs), research natural areas (RNAs), paleontological resources, prime or unique farmlands, wild and scenic rivers, lands, and minerals. There are no known hazardous waste sites in the analysis area. Minority and low income populations would not be affected. The RMP does not identify any energy sources in the vicinity.

Project/Analysis Area

This section is to clarify the Project Area and the different landscape scales that were used for analysis. As Figure 1 and Maps 1, 2 & 3 (Appendix C) show, the proposed treatment units are interspersed amongst private lands and are spread apart three and a half (3.5) miles. The Project Area includes the exterior boundary of the treatment area as shown on the Location Map (Figure 1). In describing the affected environment and environmental consequences, analysis was generally discussed at two different landscape scales. One scale, most frequently referred to as the analysis area, is the environment within or adjacent to the immediate vicinity of the Project Area. The other scale that is often used is the 5th field watershed scale (See Figure 1). This includes all lands, private and agency-administered, that fall within a 5th field watershed. There are two watersheds associated with this project area, the Klamath River-John C. Boyle Reservoir and Meiss Lake watersheds. When describing cumulative impacts to hydrology, vegetation, and wildlife, the 5th field watershed, as well as the local project area, are used.

Design of This Chapter

This chapter is designed to describe the affected environment of each resource in its existing condition followed by a discussion on the environmental consequences of each alternative. The No Action alternative is discussed first and includes a discussion of cumulative impacts anticipated regardless of implementing the PVJ Forest Health Treatments and fuel reduction treatments. The analysis includes a number of other vegetative treatments proposed in the 5th field watershed.

Cumulative Actions Considered

The following descriptions of the No Action Alternative and the Proposed Action assume the combined relevant effects of all past actions. It is not necessary to individually identify or catalog these past actions as the description of the affected environment incorporates all those actions. For the cumulative effects analysis the description of resulting impacts is the cumulative effect of all past, present and reasonably foreseeable actions. Reasonably foreseeable future actions are assumed the same for the No Action as well as the Proposed Action.

Timber management in the last decade on BLM land within these two watersheds has included approximately 5,000 acres of thinning and stewardship treatments. Stands throughout the Matrix allocation are expected to be selectively harvested approximately every 20 to 30 years, according to Klamath Falls Resource Area plans. Current timber management on the surrounding private land is more intensive and occurs on a larger scale. This approach to managing private lands is expected to continue in the future. On many private lands, it is anticipated that residual vegetation will be reflective of early seral conditions and will meet pertinent state laws governing forest management practices. Table 3 lists treatments proposed for the foreseeable future on BLM lands in the watersheds that will be considered in the following resource-specific cumulative impact discussions. Other incidental use of the public lands such as recreational use is expected to continue at similar rates as the past ten years.

Table 3: Additional Treatments Currently Proposed on BLM lands in the Klamath River-John C. Boyle Reservoir and Meiss Lake watersheds.

Treatment	Approximate Acres	Anticipated Year
Hamaker Title II Timber Sale	320	2007-2008
Fuels treatments	2000	2008-2010
Gerber Stew Stewardship Thinning	1190	2008-2010
Gerber Stew Mastication	361	2008-2010
Gerber Stew Pile Biomass	Landings Only on 6793 acres	2008-2010

Vegetation - Affected Environment

Upland Forest

Forested lands in the proposed treatment area are generally mixed species (primarily ponderosa pine, with smaller components of incense cedar, white fir, western juniper, and Oregon white oak). These stands are also multi-aged and multi-layered. Tree ages vary from one year old seedlings to overstory trees over 200 years old. Previous harvest entries created stand openings that have been seeded in or planted and contribute to the multi-species, multi-layered structure of the forest.

The project is located within the Northern California Mixed Conifer Biophysical Setting, which is a Fire Regime I. This fire dependant ecosystem historically experienced primarily short-interval (10-20 year) surface fires with occasional mixed severity and stand-replacement fires at 30 to 100 year intervals (Agee 1993, Agee 1994, Kilgore 1973, McNeil & Zobel 1980, Skinner & Chang 1996, Taylor 1998). The analysis area generally has not experienced fire in at least 100 years, except for a small portion of Section 7, which was burned as part of the Fried Chicken Wildfire in 1987, due to fragmentation, grazing, and fire suppression. Consequently, the project area is currently in Condition Class III.

Western pine beetle and mountain pine beetle are the insects most damaging to the ponderosa pine component in these stands. White fir is often attacked by the fir engraver beetle, and often suffers dieback of top branches, limiting height growth. Total mortality from the fir engraver can also occur when the white fir are highly stressed during drought years, particularly on these lower elevation sites.

Further discussion of forested stands in the proposed treatment area can be found in the Topsy/Pokegama Landscape Analysis (Forest Composition section, pp. 17-24, and Ecosystem Structure and Function section, pp. 27-34).

Special Status Plant Species (Survey and Manage, Bureau Sensitive and Strategic)

Vascular Plants

The proposed timber sale area was surveyed for special status vascular plants in June 2007. No populations of special status vascular plants were found.

Nonvascular Plants

This area of dry forest offers no potential habitat for special status nonvascular plant species.

Noxious Weeds

The proposed timber sale area was surveyed for noxious weeds in June 2007. No populations of noxious weeds were found.

Vegetation - Environmental Consequences

Upland Forest

No Action

This alternative would mean no immediate timber harvest in the project area. Tree stands would continue to grow more dense making them susceptible to insect and disease attacks. Mortality from insects would continue, and result in increased fuel loading of dead material, both standing and ground level. This would increase the severity of any wildfire that would take place

Cumulative Effects of No Action

Considering the 5th field watershed scale, the greatest vegetation change would be on private lands. Industrial forestry objectives involve shorter rotations and a higher percentage of early seral habitat. This even-aged management on private lands will result in clear cuts typically planted with ponderosa pine seedlings. Over time, these will develop into patches of even-aged ponderosa pine stands distributed over the landscape. BLM forest lands would continue as relatively dense stands, with increased mortality from bark beetle attack, with a resulting increase in forest fuels. The risk of stand replacing fires on these lands would continue to increase.

Proposed Action

Density Management thinning in combination with follow-up fuel reduction treatments (under burn) as proposed, would continue to maintain connectivity and late successional habitat over time by retaining a high percentage of the healthier older/larger trees. The thinning would increase resiliency of the remaining trees by reducing the competition for limited resources, restore desired species composition to that described in the RMP (page E-10), and also reduce the risk of stand replacement fire. Canopy closure in the more densely stocked stands would be reduced, but it is estimated that 50 percent or more of the existing canopy closure would be retained after treatment. Some larger (20+ inches DBH) trees would be harvested; however, most of the late seral structure and function existing would be maintained. The RMP directs that all size classes be managed. The silvicultural

prescription directs culturing around high value, large old growth trees, particularly, older pines. The KFRA has, for a number of years, thinned around these high value trees to improve vigor. In many cases, the trees marked for cutting around these large, old trees are the more shade-tolerant white fir and range in diameter from 8” to 20” DBH. Therefore, a diameter limit is rarely used in prescriptions.

Forest health would be improved in the treated areas resulting in a decreased risk of mortality due to disease, insects, wildfire, and competition. Effects to forest vegetation from implementation of this alternative would not exceed those analyzed in the KFRA FEIS.

Timber harvest treatments would be designed to primarily reduce stand densities. The density management thinning proposed is designed to maintain the structural and functional late-successional characteristics. As a result, the proposed treatments are expected to have little to no reduction of late successional habitat within the area.

Assessment of 15% Standard and Guide

The Northwest Forest Plan and the KFRA RMP state federal agencies must retain on federal lands a minimum of 15 percent of the late successional forests within a fifth field watershed (RMP page 23). Guidance from the Regional Ecosystem Office (Feb. 3, 1998) indicates that the 15 percent standard and guide applies only to commercial forest lands. The proposed treatments will meet this criterion.

Cumulative Effects

In the last decade, since the signing of the RMP in June of 1995, the KFRA has thinned over 10,000 acres, using a density management prescription, south of Highway 66. The general prescription has been to harvest approximately 30-35% of the basal area in the stand consisting primarily of the understory, poorer growing, suppressed, and intermediate trees with a lower percentage of co-dominant and dominant trees. The effects of these harvest treatments have been monitored and are documented in the Annual Program Summary and Monitoring Reports (BLM 1999-2007). In summary, the desired future conditions stated above have been met both at the project level and the landscape level. Monitoring has indicated that fire severity has been reduced on treated areas and overall tree vigor has increased.

The effect of the Proposed Action, combined with future actions on federal and private lands, would result in no change in age or seral classification of stands on BLM lands within the watershed. Generally, the seral classification of BLM lands would remain as mid to late seral as the existing structural and functional composition of the stands would continue after treatment. As stated above, the greatest change in vegetation would likely occur on private lands with an increased percentage of early seral habitat.

Special Status Plant Species

No Action

Surveys found no populations of special status plant species. Therefore, no effect is expected.

Cumulative Effects of No Action

Surveys found no populations of special status plant species. Therefore, since no effect is expected, there are no cumulative effects.

Proposed Action

Surveys found no populations of special status plant species. Therefore, no effect is expected.

Cumulative Effects of Proposed Action

Surveys found no populations of special status plant species. Therefore, no effect is expected.

Noxious Weeds

No Action

This alternative would not increase the physically disturbed conditions under which many noxious weeds have a competitive advantage, nor would there be project activities that would have the potential to introduce new noxious weed populations and spread existing noxious weed populations.

Cumulative Effects of No Action

Any invasion of or spread of noxious weeds would be from activities that currently occur in the area. Motorized recreational use and other previously approved BLM management activities could introduce or spread noxious weeds. Impacts would occur only as described in other NEPA documents. Due to the potential for wildfire from the persistence of high fuel loads, weed populations may have a competitive advantage under conditions resulting from the soil disturbance associated with fire suppression activities, and from alteration of the nutrient cycling regime of a site as a result of the application of chemical flame retardants. The vehicles and machinery entering the project area to suppress any wildfires would increase the potential for the introduction of noxious weeds from sources outside the project area.

Proposed Action

In addition to impacts described under the No Action Alternative, proposed actions that result in ground disturbance could create conditions that favor the invasion of noxious weeds. The use of the mechanical equipment in the proposed action may create the disturbed conditions under which many noxious weeds have a competitive advantage. The vehicles and machinery entering the project area to implement these treatments would increase the potential for the introduction of noxious weeds into the area from sources outside the project area. Project design features for the prevention of the introduction of noxious weed seeds and plant parts would reduce the potential for the dispersal of these species into the project area (See Appendix B.).

Cumulative Effects of Proposed Action

The forest health and fuels treatments proposed would reduce the potential for high intensity wildfire and thereby reduce the potential for conditions that would provide a competitive advantage to noxious weeds resulting from the soil disturbance associated with fire suppression activities, and from alteration of the nutrient cycling regime of a site as a result of the application of chemical flame retardants. Also, the potential for the introduction of noxious weeds from vehicles and machinery entering the project area to suppress any wildfires would be reduced. Motorized recreational use could introduce or spread noxious weeds.

Terrestrial Wildlife Species – Affected Environment

This section focuses on those species considered special status species that may be affected from management activities. These will include species listed under the Endangered Species Act (ESA listed, proposed and candidate species) and those considered under the BLM special status species policy. For a list of other species and a description of their habitat that may occur in the project area, refer to the Klamath Falls Resource Area FEIS (pages 3-37 to 3-41) and the Topsy Pokegama Landscape Analysis (pages 61-75).

The objectives of the BLM special status species policy are:

- To conserve listed species and the ecosystems on which they depend.
- To ensure that actions requiring authorization or approval by the Bureau of Land Management are consistent with the conservation needs of special status species and do not contribute to the need to list any special status species, either under provisions of the ESA or other provisions of this policy.

Table 4: Federally Listed, Proposed, and Candidate Species that may occur on lands managed by the BLM, Klamath Falls Resource Area.

Listed, Proposed and Candidate Species that may occur on lands managed by the KFRA*	Federal Status**	Species or Habitat within Planning Area	Proposed or Designated Critical Habitat Present in Planning Area	Species Potentially Affected By Project	Preliminary Determination
N. Spotted owl	T, CH	Yes	No	Yes	May Affect
Canada Lynx	T, CH	No	No	No	No Effect
Shortnose Sucker	E, PCH	No	No	No	No Effect
Lost River Sucker	E, PCH	No	No	No	No Effect
Bull Trout	T, PCH	No	No	No	No Effect
Applegates Milk-Vetch	E	No	N/A	No	No Effect
Pacific Fisher	C	No	N/A	No	No Effect
Yellow-billed Cuckoo	C	No	N/A	No	No Effect
Oregon Spotted Frog	C	No	N/A	No	No Effect
Mardon Skipper Butterfly	C	No	N/A	No	No Effect

*Species list was compiled on 08/13/07 from the FWS Website for listed species that may occur on the KFRA.

** Key to Federal Status: T-Threatened, E-Endangered, C-Candidate, CH-Critical Habitat, PCH-Proposed Critical Habitat.

Threatened and Endangered Species

Northern Spotted Owl (*Stix caurina occidentalis*)

The only federally listed, proposed or candidate species that may be affected by the proposed action is the northern spotted owl. One known territory home range (2,897 acres) does overlap a small portion (46 acres) of the project area but does not intersect with the proposed timber sale area. This area equates to approximately 1% of the home range. The closest nest site is approximately one mile away from the analysis area and this territory is currently unoccupied. This territory was part of a five year telemetry study that was completed in 2007. The telemetry data does show minimal spotted owl use within section one of the analysis area. No other territories have been documented in the analysis area and current habitat conditions would not likely support nesting spotted owls. The analysis area does contain habitat classified as roosting and foraging habitat and dispersal habitat but no nesting habitat is available. Section 7 consultation with U.S. Fish and Wildlife Service is in progress and will be completed for the proposed project to meet the requirements of the Endangered Species Act, as amended.

Northern Spotted Owl Habitat within Analysis Area

There are approximately 415 acres of roosting and foraging habitat and approximately 1,147 acres of dispersal habitat within the project area (Table 5). The remainder of the area does not contain habitat that is currently classified as suitable for the spotted owl. The private lands would not likely contain suitable habitat. Most of the private stands have been harvested to the extent that they would no longer meet habitat requirements for spotted owls.

Roosting and Foraging Habitat: coniferous forest stands that provide roosting and foraging opportunities for northern spotted owls. These stands generally have less diversity in vertical structure than nesting habitat and have either a limited or poorly defined multilayer canopy structure. The understory must be somewhat open, allowing owl movement and foraging. Canopy closure may not exceed 70 percent.

Dispersal Habitat: Forested habitat that provides for owl movements between larger blocks of nesting habitat. Canopy closure is typically 40 percent or greater.

Table 5: BLM Acres of spotted owl suitable and dispersal habitat within the PVJ Analysis Area Pre-treatment

Section	Nesting	Roosting Foraging	Dispersal
1	0	381	268
7	0	0	649
9	0	6	191
10	0	20	0
15	0	8	47
Total	0	415	1147

*Section 8 is private lands and does not appear to contain any suitable or dispersal habitat. The remainder of private lands within the analysis area do not appear to contain suitable habitat for spotted owls.

**Section 10 has 40 acres of State of Oregon managed lands that would provide approximately 10 acres of dispersal habitat

Northern Spotted Owl Designated Critical Habitat and Late Successional Reserves

No spotted owl designated critical habitat occurs within the analysis area. The closest unit is OR-37 and it is located approximately 9.5 miles from the analysis area.

No other listed, proposed, or candidate species occurs within or would be affected by the project. Therefore they will not be analyzed further.

Non-Listed Special Status Species

Table 6: Special Status Terrestrial Wildlife Species that may be affected by project.

Taxon	Common Name	BLM Status	Field Surveys Conducted	Field Survey Results	Determination
Bird	Northern Goshawk	Formerly Sensitive	Yes	1 Historic Site – No new detections in 2007	No Effect
Bird	Bald Eagle	BLM Sensitive	Yes	1 Territory – 2 known nests	May Affect
Bird	White-headed Woodpecker	BLM Sensitive	No	N/A	May Affect
Mammal	Pallid Bat	BLM Sensitive	No	N/A	May Affect
Mammal	Fringed Myotis (Bat)	BLM Sensitive	No	N/A	May Affect

The list was derived from BLM sensitive species list for the Klamath Falls Resource Area. The above table represents those species whose habitat may occur within the project or that could be affected by the project. The complete list is kept on file at the Resource Office or can be found online at <http://www.fs.fed.us/r6/sfpnw/issssp/documents/ag-policy/6840-att2-or-sensitive-list.xls>

Bald Eagle (*Haliaeetus leucocephalus*)

The bald eagle was removed from the ESA in July of 2007 (USDI 2007). It is still classified as threatened by the State of Oregon and is currently on the BLM Sensitive Species list. Since no longer listed the BLM will no longer consult with the FWS for actions that may affect the bald eagle. Protection for the bald eagle is now directed locally by the KFRA RMP, nationally by the Bald Eagle Protection Act of 1940, as amended and the BLM Special Status Policy.

There is one known occupied territory within the analysis area. This territory has 2 known nest sites and has been occupied since 1996. Since 1996 the territory has produced young and fledged young in 11 of the past 12 years (Isaacs and Anthony 2006).

Northern Goshawk (*Accipiter gentilis*)

Northern Goshawks are widely distributed in most forest types. The goshawk is generally associated with mature conifer stands and uses habitat similar to that of the northern spotted owl within the resource area. The Klamath Falls Resource Area currently has 12 documented territories. Surveys, following the Survey Procedure for Northern Goshawk on National Forest Lands -1993 (USDA 1993), were conducted within the project boundaries in potential habitat in 2007.

The northern goshawk is no longer classified as a special status species by the BLM it is however considered a Bird of Conservation Concern by the Fish and Wildlife Service. Therefore protocol surveys for the Northern Goshawk were initiated in 2007. No detections of goshawks occurred. A second year of surveys in 2008 is planned. One historic nest site is documented within the analysis area. There has been no activity documented around that nest site in over 10 years.

White-Headed Woodpecker (*Picoides albolarvatus*)

The white-headed woodpecker (WHWP) is generally associated with ponderosa pine stands or mixed conifer stands with ponderosa pine as a dominant component and forage primarily on pine seeds and insects (Marshall et al 2003). They have been documented on BLM lands in the vicinity of the proposed action. WHWP species are associated with larger snags (>20") and need tree cavities for nesting (Marshall et al 2003).

Townsend's big-eared bat (*Corynorhinus townsendii*), **Pallid Bat** (*Antrozous pallidus*) and **Fringed Myotis** (*Myotis thysanodes*)

Roosting habitat for Townsend's big-eared bats is typically associated with caves, old buildings, and rock structure (Verts and Carraway 1998). This species is highly associated with caves and old buildings and would be rare in areas without this roosting structure. There is a documented population in the Klamath River Canyon, approximately seven miles southeast of the project area. Because of the lack of suitable habitat in the project area for the Townsend's big-eared bat, it will not be analyzed further.

Caves, rock structures and buildings serve as day roost for most pallid and fringed myotis bats however surveys (Cross and Kerwin 1995) on the west-side of the Klamath Falls resource area have documented the fringed myotis and pallid bats in similar habitat to that of the proposed project. These bats will to a lesser degree use hollow trees and snags to roost. Radio-tracking in Jackson County has also shown that the species uses such trees for roost sites (Cross and Kerwin 1995).

Landbirds

Presidential Executive Order (EO) 13186 is titled "Responsibilities of Federal Agencies to Protect Migratory Birds". Provisions within this document directed agencies including the BLM to evaluate

the effects of actions and agency plans on migratory birds, with emphasis on species of concern. The species listed in Table 7 are the U.S Fish and Wildlife Birds of Conservation Concern that may occur in the project area and were considered for this landbird analysis.

Table 7: U.S. Fish and Wildlife Birds of Conservation Concern 2002 that may occur in the analysis area

Species	*Associated Habitat	*Habitat Feature/Conservation focus
Flammulated Owl	Mixed Conifer	Grassy openings and dense thickets
**Northern Goshawk	Mixed Conifer and Ponderosa Pine	Mature forest including large trees, snags, down wood interspersed with openings
**White-Headed Woodpecker	Highly associated with Ponderosa Pine	Large patches of old forest with large snags

*Habitat and Habitat Feature derived from Marshal et al and Partners in Flight Conservation Strategy-East Slopes of the Cascades.

** These species were addressed previously in this section under special status species

Flammulated Owl (*Otus flammeolus*)

The flammulated owl is typically associated with ponderosa pine, open understory with patches of dense thickets for roosting. The owl typically uses larger >20” snags (Bull et al 1990 as stated in Marshal et al 2003) as nesting habitat and the open understory or adjacent grassy meadow areas as foraging habitat. The dense thickets of young ponderosa pine are used for day time roosts. No specific surveys were completed for the flammulated owl but they have been documented in the vicinity of the analysis area. Surveys for the great gray owl did not solicit any detections of the flammulated owl. The other two species, northern goshawk white-headed woodpecker, were addressed previously.

Terrestrial Wildlife Species – Environmental Consequences

Threatened and Endangered Species

No Action

Northern Spotted Owl

The current stand conditions and stand composition would change gradually over time. Stands would grow more dense and add age that can be beneficial to northern spotted owls. There would be some indirect affects to owl habitat from the No Action alternative. The risk of stand replacing fire would likely increase over time with no prescribed fire or thinning treatment (Agee and Skinner 2005). Additionally, current road density would remain the same under the No Action alternative and disturbance impacts to wildlife would continue.

No disturbance or habitat modification from timber harvest or fuels treatment would occur under the No Action alternative. Therefore no direct impacts to northern spotted owls or spotted owl habitat would occur from the No Action alternative.

Proposed Action

Northern Spotted Owl

There is one spotted owl territory that overlaps a small portion of the analysis area. This territory was included in a five-year telemetry study which showed that there was minimal use by the spotted owl pair in Section 1 of the analysis area. The owls did not use the remainder of the analysis area in the past five years according to the telemetry data. The timber harvest area is outside the spotted owl territory and known use area of the spotted owl pair. There is a small amount of spotted owl suitable and dispersal habitat (see Table 8) within the proposed timber sale harvest area. The proposed

thinning would reduce both structure and canopy closure within the stand. Since the foraging habitat within the analysis area currently consists of small islands of habitat, it is assumed that the reduction of stand structure from thinning and reduction of canopy closure would downgrade those acres to dispersal habitat (North et al 1999). Approximately eight acres of roosting and foraging habitat would be downgraded to dispersal habitat.

The remainder of the timber harvest area is already considered dispersal habitat. The prescription for the proposed harvest is thinning primarily smaller diameter trees (see figure 2) and removing approximately 1/3 of the basal area. The residual stand will still maintain dispersal habitat after harvest. Post harvest stand exams from past timber harvest activities with similar prescriptions have demonstrated that post harvest canopy closure and structure maintained spotted owl dispersal habitat (USDI BLM APS 2001, 2004)

Table 8: BLM Acres of spotted owl suitable and dispersal habitat within the PVJ Analysis Area post-treatment

Section	Nesting	Roosting Foraging	Dispersal
1	0	381	268
7	0	0	649
9	0	6	191
10	0	20	0
15	0	0	55
Total	0	407	1155

*.The private lands within the analysis area also does not appear to contain suitable habitat for spotted owls.

**Section 10 has 40 acres of State of Oregon managed lands that is estimated through aerial photography to provide approximately 10 acres of dispersal habitat

Benefits to owl habitat would occur from reducing the risk of stand replacing fire through thinning and fuels reduction (Lee and Irwin 2005). The fuels reduction treatments are planned within the timber harvest units and within Section 1. This is outside of the core area (.7 miles from known nest) of the known spotted owl site. Therefore no direct impacts are anticipated from the fuels treatments. The majority of use for this territory is focused close to the nest site (approximately 1 mile from the edge of the analysis area) and the telemetry data suggests that there is little use within the analysis area. This confirms other findings (Bart 1995) showing the use during the nesting season is focused to that suitable habitat in relatively close proximity to the nest.

The majority of the fuels reduction treatment is prescribed burning (Table 2). Prescribed fire and other fuels treatments have the potential to remove canopy, coarse woody debris and understory structure therefore simplifying stand structure which may reduce prey availability. PDFs (Appendix B) incorporated into the proposed project are designed to lessen those potential impacts and maintain the structure and stand diversity to maintain spotted owl habitat in the short-term and lessen the risk of a wildfire to occur in that habitat (Lee and Irwin 2005).

The proposed action is consistent with the strategy of the northern spotted owl Draft Recovery Plan (USDI 2007) and the NWFP. The strategy for both is focused on developing and maintaining large blocks of late successional habitat that would maintain clusters of breeding pairs of spotted owls with dispersal and suitable habitat available between the large blocks. The proposed project is not within any late successional reserve (LSR) or Managed Owl Conservation Area (MOCA) as proposed under the Recovery Plan. The closest LSR is approximately 8.5 miles to the Southwest on

the Klamath National Forest and the next closest is approximately 15 miles to the Northwest on the Winema National Forest. The Klamath Falls Resource Area does not contain any large late successional reserves. This EA is also consistent with those management recommendations that were addressed in the Topsy-Pokegama Landscape Analysis (TPLA). For spotted owls the TPLA management recommendations recommended maintaining multi-story stands that maintain habitat and provide connectivity. The proposed action would meet those recommendations.

Cumulative Effects

Spotted Owls

Assessing cumulative effects to wildlife is difficult due to the scale, range of the species, distribution, life history and habitat. For this assessment the extent of the analysis considered will be the Oregon portion of the two fifth field watersheds that include private lands and that portion of the species range that falls within those boundaries.

The most efficient way to address cumulative effects on spotted owls and spotted owl habitat is to look at habitat within those watersheds and the effects on spotted owl habitat from this project and those foreseeable projects as listed in Table 3. Since there are no direct effects anticipated on spotted owls from the proposed action, the suitable habitat within the project is the main consideration. The following table shows the current amount of habitat available for the spotted owl within both watersheds.

Table 9: Current Spotted Owl Habitat within the Meiss and Klamath River Fifth Field Watersheds

Watershed	Acres Nesting Habitat	Acres Roosting/Foraging Habitat	Dispersal Habitat
Meiss Lake	81	465	1753
Klamath River-John C Boyle	1867	6832	8104

The proposed project would downgrade approximately eight acres of roosting/foraging habitat within the proposed project. This equates to less than 1% of roosting and foraging habitat available in both watersheds. The other foreseeable projects (Table 3) within the watersheds are focused on younger stands not considered suitable habitat but rather dispersal. It is anticipated that if and when completed those projects would maintain dispersal habitat and no suitable habitat would be lost. Therefore the cumulative impacts from the proposed projects and those foreseeable projects within the watershed would not appreciably diminish spotted owl suitable habitat.

The principal change in habitat for owls within the watersheds has occurred on private lands. The majority of the private lands within the west-side of the KFRA boundaries have been harvested, are considered early seral habitat, and would not be considered suitable nesting habitat or often even dispersal habitat. The overall affect of this type of harvest practice on spotted owls within these watersheds and the resource area is unknown at this time.

Non-Listed Special Status Species (Bureau Sensitive Species)

No Action

The current stand conditions and stand composition would gradually change over time to a more dense condition. This could benefit some species and be detrimental to others. Although there would be no direct impacts to non-listed species or their habitat would occur from implementation of the No Action alternative the risk of stand replacing fire would likely increase over time with no prescribed fire or thinning treatment (Agee and Skinner 2005). The current road system would remain under the No Action alternative with subsequent disturbance impacts to wildlife remaining.

Proposed Action

Bald Eagle

Typically some minimal disturbance and habitat modification from timber harvest or fuels treatment would occur under this alternative. There is one known bald eagle territory in the proposed sale area. As part of the project design features of the proposed action (Appendix B) no ground disturbing activity is planned within ¼ mile or a ½ mile line of sight of the bald eagle nest from Jan 1st- Aug 15th. This will minimize disturbance impacts to this pair of bald eagles during the critical courtship, nesting and nestling periods. These PDFs have been shown to be effective on previous management activities (Grenada East TS, Whiteline TS and juniper management activities). These PDFs are consistent with the KFRA RMP and the Bald Eagle Recovery Plan (USDI 1986). Although the bald eagle is considered recovered from the Endangered Species Act it is still protected under the Bald Eagle Protection Act of 1940, as amended. The proposed action meets the requirements of this act.

The proposed thinning may reduce some potential nesting structure and perching structure but the majority of trees proposed for harvest are in the small diameter classes (<12" DBH) (figure 2) and would currently not be used by eagles. The proposed thinning would have long-term benefits by allowing remaining trees to develop at an increased rate and be available for eagle use sooner. The understory thinning with fuels reduction would also reduce the risk of stand replacing fire therefore reducing the risk of loss of nesting habitat for bald eagles (Agee and Skinner 2005).

No foraging habitat (lakes, ponds, streams) is within the analysis area therefore foraging habitat would not be affected from the proposed action.

Similar to the No Action alternative, stands will become denser over time and be more susceptible to insects, disease and loss to wildfire. However, because most of the stands will be treated to reduce the density and retain the most healthy and vigorous growing trees, there will be a reduction in the risk of stand replacing fire would not occur under the. Benefits will occur to special status species such as the bald eagle from thinning and fuels treatments, especially where nest trees are protected.

White-Headed Woodpeckers

The white-headed woodpecker occurs mainly in open ponderosa pine or mixed conifer stands dominated by ponderosa pine (Marshal et al 2003). The proposed treatment would remove some trees that add to the suitable habitat for these species, primarily dead-top trees and any larger ponderosa pine. However the majority of the thinning would occur on smaller diameter trees (Figure 2). Snag retention and green tree retention guidelines (Appendix B) would maintain foraging and nesting habitat for these species (Bull et al 1990 as cited in Marshal et al 2003).

No existing snags are planned to be cut unless required for safety (OSHA requirements). This would protect and maintain snag habitat that is currently available. There is potential for loss of woodpecker reproduction if harvesting occurs during the nesting season. Some nest structure could be lost or disturbance near the nest site could result in nest failure. Thinning will continue to promote larger trees in the stand which may benefit the white-headed woodpecker. These woodpeckers use larger (>16") snags, dead-top and heart rot live trees for their nesting structure (Marshal et al 2003). Under the proposed action, impacts from disturbance to local populations would be minimal. Daytime activities associated with the proposed project may disturb some nesting and foraging sites, but only in the short-term for the duration of harvest and fuel treatment activities. The proposed prescribed fire activities would promote snag recruitment and remove encroaching white-fir that competes with ponderosa pine

Pallid and Fringed Myotis Bats

These species may occur in the project area although they are generally associated with caves, mines or rock crevices. The fringed myotis and pallid bat are sometimes found using cavities in snags as roosts (Cross and Kerwin 1995). Although some cavity roost areas may be lost, the snag retention guideline will maintain snags to provide for future roosting structure (Appendix B). Under the proposed action, short-term disturbance of individuals being pushed from snags or thickets may occur. These disturbances however would have a short duration and overall would have minimal impacts to the species. The existing snag and green tree retention levels (see Appendix B) will be sufficient to meet the needs of both species.

Flammulated Owls

The flammulated owl is typically associated with ponderosa pine, open understory with patches of dense thickets for roosting. The owl typically uses larger >20” snags (Bull et al 1990 as stated in Marshal et al 2003) as nesting habitat and the open understory or adjacent grassy meadow areas as foraging habitat. The dense thickets of young ponderosa pine are used for day time roosts. The proposed action would maintain nesting habitat by maintaining the available snags (PDFs – Appendix B) and providing green tree retention for future snags. The proposed prescribed fire would likely increase the snag recruitment within the burn area. The fuels treatments would also maintain an open understory and provide a mosaic of openings for foraging. There is potential for loss of reproduction if harvesting occurs during the nesting season near an occupied nest. Some nest structure could be lost or disturbance near the nest site could result in nest failure. The thinning of the younger ponderosa pine would reduce the amount of suitable roosting habitat.

Cumulative Effects

It is the policy of the BLM to protect, manage, and conserve special status species and their habitats such that any Bureau action will not contribute to the need to list any of these species. For special status species such as woodpeckers, owls, and bats the primary habitat components needed are large snags, large green trees and CWD. The standards and guidelines in the NWFP, additional guidelines in the KFRA RMP, and the project design features provide for these habitat components to ensure that these actions do not further the need to list these species. The proposed action is also consistent with those management recommendations described in the Topsy-Pokegama Landscape Analysis (TPLA) which encompasses this analysis area. The TPLA recommended maintaining multi-structural stands, large snags and connectivity for snag associated species (flammulated owl, white-headed woodpecker and bats). This EA has PDFs that would maintain that structure.

The cumulative effects for this project and others on both public and private lands within the KFRA would not adversely affect the populations of special status species on public lands on the resource area and will not contribute to the need to list these species. Project design features, BMPs and Standards and Guidelines ensure that habitat components necessary for these species are maintained during implementation of projects. The additional foreseeable projects that may occur in the two watersheds will not further reduce the habitat of these species since they are focused on younger stands. Therefore the proposed action and the other foreseeable actions will not further the need to list the special status species analyzed in this document.

Soils - Affected Environment

Soils in the project area are summarized in Table 10 and displayed in Appendix C, Map 2. The dominant soil type in this region is the Pinehurst-Greystoke complex, consisting of deep and well drained soils found primarily on plateaus. Permeability is moderate causing slow runoff and only a

light hazard from runoff. These soils are susceptible to compaction by mechanical equipment during wet periods. The Booth-Kanutchan soil types are found on plateaus as well. They are moderately deep and well drained, with slow permeability and a slight hazard of erosion. Mechanical operations are made difficult on these soil types by the clayey soil layer and wetness during fall and spring. The remaining soils in this project area are found on hillslopes. The Skookum-Rock Outcrop-Rubble Land complex includes moderately deep and well drained soils, with a high erosion hazard due to the slow runoff. Additionally, the use of mechanical equipment is made difficult by slopes and rocky, uneven surfaces. The Greystoke-Pinehurst complex is found both on north and south slopes. Permeability is moderately slow causing a moderate water erosion hazard. Erosion, compaction and plant competition are major limitations to timber production on these soil types. It is likely that compaction could seriously damage soil if mechanical equipment were utilized during wet seasons. There is also a small area of Lorella-Skookum soils in the project area and an even smaller area within the treatment units. These soil types include shallow, but well drained soils with slow permeability, medium runoff and moderate erosion hazard. These soil types are very rocky as well, making the use of mechanized equipment difficult.

Table 10: Acres and Soil Types in the PVJ Timber Sale EA Analysis Area

Acres	Soil Type
2,718	Pinehurst-Greystoke Complex, 1 to 12 Percent Slopes
193	Greystoke-Pinehurst Complex, 12 to 35 Percent North Slopes
115	Greystoke-Pinehurst Complex, 12 to 35 Percent South Slopes
409	Skookum-Rock Outcrop-Rubble Land Complex, 35 to 70 Percent Slopes
11	Lorella-Skookum Complex, 15 to 35 Percent Slopes
103	Booth-Kanutchan Variant Complex, 0 to 3 Percent Slopes

The soil disturbance issues of greatest concern are (1) compaction, (2) erosion, and (3) nutrient loss. These soil issues and concerns for the affected environment are addressed in the Topsy/Pokegama Landscape Analysis (pages 35-40 and Appendix A). Timber harvesting and road building have been identified as having the most potential for causing compaction. Repeated use of ground-based logging equipment (tractors and skidders) has, in some places, displaced or compacted soils and contributed to the reduction of soil organic matter reserves. Due to the overall aridity, gentle slopes and stable soil conditions of the project area, there is a low probability that erosion will reduce soil productivity, with the exception of roads (TPLA pp. 38).

Soils - Environmental Consequences

No Action

Only incidental minimal detrimental effects would occur to soils, typically from off road vehicular travel. No soil disturbing treatments would be implemented under this alternative, but would occur only as described in other NEPA documents. The risk of stand replacing wildfire and resulting increased erosion would continue to increase as live and dead fuels (biomass) continue to accumulate.

Proposed Action

Implementing the type of activities outlined for the Proposed Action would result in some detrimental soil impacts, primarily soil compaction and displacement, from the ground based operations but the impacts are expected to be within RMP acceptable levels. These impacts are not expected to have a great effect on soil productivity. Based upon past monitoring, these impacts would occur primarily on the landings and the main skid trails into the landings. Detrimental soil

impacts include soil displacement, creation of adverse cover conditions, and detrimental soil compaction (defined as 15% increase in soil bulk density). These impacts were analyzed in the RMP FEIS (pages 4-11 to 4-18). The area where the highest potential for compaction to occur is on the Greystoke series occurs.

Most harvesting operations on the resource area are done using mechanized ground based equipment, particularly when harvesting small diameter trees (<20"DBH). This involves grapple skidders and a mechanical harvester that has a sawhead at the end of a 20 foot hydraulic arm. The use of a mechanical harvester normally results in a greater area of ground disturbance since it is not confined to skid roads. The mechanical harvester generally leaves the skid trails to cut and bunch trees designated for cutting. A mechanical harvester reportedly causes less soil compaction since it exerts fewer pounds per square inch of force/pressure than other ground-based harvesting machinery (tractors and skidders). In addition, because the mechanical harvester has a 20 foot radial arm, it is able reach into stands and extracts trees without having to drive to every tree. Use of a mechanical harvester is becoming the industry standard and is the most economical choice for small diameter density-management thinning of forest stands and concurrent cutting and yarding of merchantable and sub-merchantable material, which in combination with whole tree yarding provides additional benefits such as fuel reduction. By combining commercial and pre-commercial thinning soil resource damage is reduced by restricting mechanical equipment to a single entry for the two treatments.

The resource area has implemented monitoring to determine the areal extent of soil disturbance and changes in soil bulk density in representative ground disturbing projects to evaluate soil health. Further discussion of soil chemistry, productivity, and biological integrity can be found in the TPLA and KFRA RMP.

Other incidental impacts on soils from recreation (vehicular travel) would continue to occur.

Mitigation

The Klamath Falls Resource Area RMP Best Management Practices are designed to limit detrimental soil disturbance to less than 20% of the total acreage within an activity area (Page D-11 and D-23 of the RMP). It is especially important to assure that mitigation is being applied where Greystoke series soils occur. To minimize soil disturbance, the most common BMPs required are:

- Limit mechanical cutting and yarding operations to periods when the soil moisture is below 20 percent at a six inch depth. Even lower soil moisture levels are preferable on fragile soils.
- Confine soil disturbance through use of designated skid trails, marked in advance.
- Enact seasonal restrictions to limit logging operations to the dry season to prevent compaction, puddling, and erosion.
- Residual slash will be placed upon skid trails upon completion of yarding.
- Avoid placement of skid trails in areas with potential to collect and divert surface runoff, such as the bottom of draws and ephemeral drainages.
- Retain and establish adequate vegetative cover in accordance with RMP BMPs to reduce erosion.
- Retain enough small woody (dead and down) material to sustain soil nutrients. See RMP BMPs for specifications. In ponderosa pine forest land, 9 tons per acre of duff and litter (approximately ½ inch deep).
- If detrimental soil impacts exceed 20 percent of the total acreage within an activity area, the BMP guidelines (KFRA RMP, page D11) state that impacts will be mitigated with treatments such as tilling or seeding.

- Slash that is left on the project area from manual treatments will serve to reduce surface soil erosion and sedimentation. Future prescribed burning of treated areas, as part of this alternative, would be designed to create a mosaic of burned and unburned areas which would also reduce erosion and sedimentation in the analysis area (Maurer, 2001).

These BMPs would be implemented as part of the Proposed Action. As a result of implementing the BMPs, effects on soil productivity due to detrimental soil impacts from soil displacement and soil compaction would be minimized.

Cumulative Effects

Long term cumulative effects on soils, even from multiple types of activities, are not expected to greatly affect soil productivity and future potential of the area for timber production. Monitoring information, collected to date, regarding the effectiveness of BMPs on minimizing soil compaction and disturbance indicates that cumulative effects to soil resources would not exceed the RMP standards for detrimental soil conditions (ROD, page D-11). Treatments would continue to be implemented during the summer months (June-October) when soils are dry and least susceptible to compaction. On-going monitoring to measure soil compaction and recovery will assure that impacts to soil are within the RMP standards and are mitigated by appropriate measures when needed.

Roads - Affected Environment

Current road densities on BLM land in the project area are approximately 5.0 miles of BLM road per square mile due to the small design of this sale area and the associated terrain (Table 11). The RMP goal is to reduce road density to 1.5 miles per square mile. (KFRA RMP pp. 71).

Table 11: Road Density in PVJ Project Area (BLM ownership)*(all ephemeral streams)

	Drainage Density (miles of stream per square mile)	Road Density (miles of road per square mile)	Number of Stream Crossings (per mile of road)	Miles of Road within 100 feet of streams
PVJ Timber Sale EA Project Area	2.09	3.4	1.27	1.16

Roads - Environmental Consequences

No Action

Road use and periodic maintenance would continue. This would involve grading and spot rocking depending upon annual road maintenance needs and funding.

Proposed Action

There would be a net decrease in permanent road densities because 2.8 miles of road decommissioning and obliteration is proposed and only 0.2 miles of new road construction is proposed. There would also be additional proposed year round road blockages of 0.5 miles of spur roads, decreasing the total amount of open roads. This would help to meet RMP objectives to decrease road density. There would be 20% reduction of BLM roads open in the analysis area (Table 12). Improvements in roads and road drainage facilities (1.3 miles) and an additional 2.5 miles of spot rocking would provide a benefit to water resources by reducing potential inputs of sediments from roads into streams. Surfaced roads generally produce less sediment erosion than unsurfaced, dirt roads. In addition, maintenance (grading and brushing) would occur on 6.3 miles of existing road. Effects from the proposed action in regards to roads would not exceed those addressed in the RMP/FEIS.

Table 12: Pre- and Post-treatment Road Density in PVJ Project Area (BLM ownership)

Section	Acres (BLM Owned Land)	Pre-Treatment (Road Miles)	Density (Road Miles/Sq. Mi.)	Roads added (miles)	Post-Treatment (Road Miles)	Difference
1	640	4.36	4.36	0.00	4.36	0.00
7	640	7.50	7.50	0.00	4.63	2.87
9	320	0.79	0.40	0.19	0.89	-0.10
10	120	0.00	0.00	0.00	0.00	0.00
15	271	0.70	0.30	0.00	0.70	0.00
		13.35		Road Density Reduced		2.68

Cumulative Effects

The KFRA continues to strive to reduce open road density and environmental effects associated with roads and road use during implementation of projects proposed in the foreseeable future. A combination of BLM and private checkerboard ownership and subsequent access agreements with adjacent landowners reduces BLM’s flexibility in managing road densities. At the landscape level, the Proposed Action would provide an incremental improvement over the status quo. Over time, the expected cumulative effect of incremental improvements from each project is to reduce road density in the watershed. At the project area level, closure of 2.8 (0.6 mi. closure, 2.2 mi. closure/obliteration) miles of road reduces current road density of existing BLM roads.

Hydrology - Affected Environment

The PVJ Sale analysis area is located in the Klamath River-John C. Boyle Reservoir 5th field watershed and the Meiss Lake 5th field watershed in the Upper Klamath River Sub-basin. Streams within the analysis area are on a relatively flat plateau. Streams in the JC Boyle Reservoir watershed drain off the steep canyon walls into the Klamath River. There are 2.3 miles of ephemeral streams in the project area with about ¼ mile of those in the Klamath River-John C. Boyle Reservoir 5th field watershed with the rest in the Meiss Lake 5th field watershed. The Klamath River-John C. Boyle Reservoir 5th field watershed, which encompasses 1,518 acres of the project area, includes the Klamath River Canyon. The remaining 2,034 acres are in the Meiss Lake 5th field watershed which is part of the closed basin known as Butte Valley. Two subwatersheds have treatment units including 23,824 acres in the Northwest Butte Valley subwatershed, and 15,263 acres in the Butte Valley Rim subwatershed (See Appendix C: Map 4). There are no intermittent or perennial streams in the project area. Best Management Practices (BMPs) regarding yarding and crossing ephemeral streams would be followed as recommended in Appendix B.

Hydrology - Environmental Consequences

No Action

Only incidental soil disturbance and resulting increases in sedimentation would occur, primarily along roads where they cross streams. The only immediate changes in canopy opening from vegetation treatments would be based on other approved projects. Vegetation that has become established on some existing roads and skid trails would continue to contribute to the capture and infiltration of water. Routine road maintenance (grading and spot rocking) would occur periodically and be designed to minimize effects on sediment inputs into stream channels.

Proposed Action

Potential effects on water resources resulting from proposed management activities would include compaction and erosion from ground-based logging and shearing equipment. Soil compaction can

reduce water storage and capacity, decrease infiltration, and increase overland flow. Soil compaction and displacement can cause erosion and increase sediment inputs to stream channels. Areas especially susceptible to erosion are sites where slopes are 30% or greater (slopes in the analysis area are less than 35%). By following the BMPs and PDFs listed in Appendix B, negative effects from compaction and erosion are expected to be minimal.

Treating overstocked stands could allow more water to flow down to intermittent stream channels because there would be less transpiration from trees and a greater amount of snow accumulation in openings compared to the existing stand condition. This could affect localized run-off patterns at the site scale. Because of the low stream density in the area and relatively porous soils (well drained), it is not expected that that flow patterns would be altered in intermittent streams which drain into the Klamath River or into Butte Valley. Thinning would result in a reduction of canopy; however, this action is not expected to increase openings to a level beyond the natural range of variability at the 6th or 7th field scale. It is also expected that canopy would recover to pre-thinning levels relatively quickly due to maintenance of larger trees and the release of suppressed growth from the current overstocked condition.

Use of existing roads and skid trails within the riparian reserves could remove most vegetation established on these routes since their last use. Vegetation would be affected by machinery passing over the routes, and surrounding vegetation could be affected by soil displacement from the roads and trails. This could cause a reduced amount of water capture and infiltration in the short-term. Adverse effects from loss of vegetation are likely to occur until the disturbed sites are re-vegetated. Applying PDFs, such as reseeded of roads and trails after project completion, would minimize adverse effects on the vegetation on the routes and to the immediate surrounding vegetation. The long-term positive effects on the vegetation community from overstory thinning and reduction of fuel loads would outweigh these short-term negative effects. Some sediment could enter intermittent streams as a result of soil disturbance on roads and skid trails that cross or are near ephemeral channels. Sediment could also enter streams from road maintenance and renovation activities, and from hauling activities on road that cross streams. Following BMPs and PDFs would reduce the likelihood of sediment routing to streams sediment inputs, thus reducing probability of adverse effects.

Road improvements, renovations, and obliteration could result in beneficial effects on water quality in stream channels. These road treatments would aid in reducing interception and routing of surface runoff which could in turn reduce sedimentation potential. In addition, there would be net reduction in road density after planned treatments occur.

Based on the above analysis and review of the proposed action, proposed activities are consistent with the objectives for riparian reserves and the Aquatic Conservation Strategy (ACS) in the KFRA RMP and would not prevent or retard attainment at the project, watershed, or landscape scale, of any of the ACS objectives (RMP, pages 7-8). The effects of the proposed project on meeting the nine ACS objectives are summarized below:

- The project would 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, because no harvest or activity is planned within Riparian Reserves.
- The project would maintain and restore spatial and temporal connectivity within and between watersheds, because no harvest or activity is planned within Riparian Reserves.

- The project would maintain and restore the physical integrity of the aquatic system, including shorelines, banks and bottom configurations, because no harvest or activity is planned within Riparian Reserves.
- The project would maintain and restore water quality necessary to support healthy riparian, aquatic and wetland ecosystems. The proposed action is not expected to result in delivery of fine sediment or other pollutants to streams. The project would result in a net reduction of road density in the watershed. No harvest adjacent to streams is planned in the analysis area.
- The project would maintain and restore the sediment regime under which aquatic ecosystems evolved. No change in flow patterns due to reductions in canopy are expected from this project at the project, watershed, or landscape scale.
- The timing, magnitude, duration and spatial distribution of peak, high and low flows would be protected. The project would result in a net reduction of road density in the watershed. The project is not expected to increase or decrease in-stream flows.
- The project would not impact the timing, variability and duration of floodplain inundation and water table elevation in meadows and wetlands, because no hydrologic impacts are expected.
- The project would not impact the species composition and structural diversity of plant communities in riparian areas and wetlands that provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion and channel migration and supply amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability. The project would not impact in-stream flows or impact the vegetation or channel condition of streams and floodplains.
- The project would maintain and restore habitat to support well-distributed populations of native plant, invertebrate and vertebrate riparian-dependent species, because no harvest or activity is planned within Riparian Reserves.

Cumulative Effects

The proposed project treatment areas comprise approximately 1.2% of J.C Boyle Reservoir 5th field watershed and 1.5% of the Meiss Lake 5th field watershed. Cumulative effects from the Proposed Action are expected to be minimal at the watershed scale because the analysis area comprises a very small percentage of the watershed. Although a segment of the Klamath River is included in the watershed, the treatments proposed would not produce effects that would affect this system.

Timber management in the last decade on BLM land has included approximately 4,200 acres of thinning in these watersheds. Stands throughout the Matrix allocation are expected to be selectively harvested approximately every 20-30 years, according to Klamath Falls Resource Area plans. Current timber management on the surrounding private land is more intensive and occurs on a larger scale. This management regime is expected to continue in the future. The treatments proposed under the Proposed Action would aid in reducing the likelihood of a future catastrophic fire event at the watershed scale in the long term. These management actions would be part of establishing a more stable and resilient ecological condition in the watershed, shifting towards multi-aged forested stands with a greater proportion of mature trees.

Since the project would result in a net reduction in total open roads, the cumulative effects would be less than those resulting from keeping the current road network in the analysis area. Measurable cumulative effects from the Proposed Action are not expected at the watershed scale. The analysis area consists of such a small proportion of the watershed, and the timber management on BLM lands in the analysis area is minimal when combined with timber management on surrounding private lands. At the watershed scale, management on BLM and private lands would aid in reducing stand replacement fire events and improving watershed conditions.

Aquatic Species and Habitat – Affected Environment

Fish are not known to occupy intermittent streams within the project area due to the lack of continuous connectivity and low relative water quantity that limits the ability of these streams to provide habitat. Amphibian species known to occur are those generally associated with intermittent and ephemeral water sources. These include Pacific chorus frog, the long-toed salamander, and the Western toad. Riparian-dependent vertebrates in the area include the Klamath garter snake, common garter snake, mountain kingsnake, and Western Pond Turtle. The Klamath River is outside the area of effect for this proposal, so fish and other aquatic species that occur in the Klamath River are not considered in this analysis. Although there is no aquatic species habitat in the project area due to its position in the watershed, effects on hydrology including changes in the flow regime, water yield, timing of run-off, and sedimentation could potentially impact downstream habitats.

Aquatic Species and Habitat – Environmental Consequences

No Action

Due to limited aquatic habitat and lack of continuous connectivity to the project area, the direct or indirect effects of the No Action alternative on aquatic species and habitat are not quantifiable at the project or watershed scale.

Proposed Action

Because the project retains most of the overstory, including effects from commercial and pre-commercial thinning, fuels treatment and burning, the analysis of the hydrologic impacts concluded that there would not be detectable changes in these processes resulting from this project. Therefore, no flow or sediment related impacts to aquatic habitat are anticipated.

Cumulative Effects

Based on the hydrologic assessment above, it is not expected that the proposed treatments result in any direct or indirect impacts to aquatic species habitats. Additionally, no treatments are planned within or adjacent to riparian reserves. Due to the limited aquatic habitat and lack of continuous connectivity to the project area, cumulative effects from the proposed action would not be measurable at the project or watershed scale. Based on the above analysis and review of the proposed action, proposed activities are consistent with the objectives for riparian reserves and the Aquatic Conservation Strategy (ACS) in the KFRA RMP and would not prevent or retard attainment of any of the ACS objectives (RMP, pages 7-8).

Grazing Management - Affected Environment

The proposed treatment areas are within small portions of the Chicken Hills (#0141) and Chase Mountain (#0101) livestock grazing allotments. Cattle grazing is permitted within the proposed treatment areas, though most of the treatment areas receive little if any grazing due to steep slopes, thick timber, and/or limited herbaceous growth throughout the landscape surrounding the project area. A complete description of the grazing activities in these allotments, including current use levels, historical use, allotment boundaries, etc. is found in the Topsy-Pokegama Landscape Analysis, July 1996. In addition, Rangeland Health Standards Assessments were completed in 2001 for both grazing allotments. The assessments determined that 3 of the 5 Standards were not being totally met on both allotments. The Standards not being met were Standard 1 – Watershed Function Uplands, Standard 3 – Ecological Processes, and Standard 5 – Native, T&E, and Locally Important Species. The main causal factors for not meeting these Standards were historic livestock grazing and past and present forest harvest activities including activities on adjacent private lands. These

assessments may also be referenced for more information on livestock grazing. Additional information is found in the KFRA RMP/FEIS, KFRA ROD/RMP and Rangeland Program Summary.

Grazing Management - Environmental Consequences

No Action

Livestock management and grazing would continue to occur with resulting forage production and use.

Proposed Action

Harvesting activities as described in the proposed action would have a small, mid-term (2 to 10 years) positive effect on livestock grazing due to an increase of palatable, herbaceous plant species that would be more abundant once some of the overstory trees are removed. There could be a short-term (1 to 2 years) negative effect on forage amounts due to the ground disturbing impacts of the timber harvesting machinery. Observations of the grazing use in the proposed activity area by BLM range personnel have indicated that cattle make little use of the majority of these BLM administered lands in the project area. Most of the grazing use in the area is made on the intermingled private and state owned lands.

A much more detailed description of potential impacts, including the cause and effect relationships between grazing, timber harvest activities, vegetation community structure, and forage production is found within the Rangeland Health Standards Assessments for both grazing allotments and the July 1996 Topsy-Pokegama Landscape Analysis. Additional information is also found in the Klamath Falls Resource Area Resource Management Plan/EIS, Record of Decision, and Rangeland Program Summary.

Cumulative Effects

Cumulative effects in the short term (less than 2 years), include a slight decrease in available forage for livestock. The long-term cumulative effects of vegetation treatments in the area would be to improve ecological condition and provide an increase in palatable herbaceous plant species, especially in overstocked areas with little understory now.

Cultural Resources – Affected Environment

The project area at the time of Euro-American contact was occupied by the Klamath and Modoc peoples. It lies between the established territories of both groups; the southwestern edge of the Klamath and the northwestern corner of the Modoc territories (Ray 1963 and Spier 1930). Their boundaries were likely not permanent and consisted of shared areas. Both groups spoke languages of the Penutia phylum and focused their settlement and subsistence on lake and riverine environments. Use of the uplands, which coincides with this project area, was restricted to temporary seasonal gathering and hunting. In 1864, both groups and the Yahooskin band of Snake Indians, ceded a large portion of their territory, including the project area, to the United States.

Peter Skene Ogden was the first Euro-American to travel in the vicinity of the project area. On January 24, 1826, he and his party of fur trappers camped along the Klamath River (Beckham 2006:42). The next significant Euro-American event in the vicinity was the establishment of the Applegate Trail by Jesse and Lindsey Applegate. In 1846, the Applegate brothers laid out the Southern Emigrant Route, a connection between the southern end of Willamette Valley with the Oregon Trail at Fort Hall. The Applegate Trail, as the route became known, crossed over Chase and Hamaker Mountains located 5-6 miles north of the project area.

Post-1846, the project area was used primarily for ranching and logging. Surveyors for the General Land Office described and mapped the landscape within Township 41 south and Range 7 east from August to September in 1858 (Beckham 2006:24). The surveyor's description is as follows:

“Land is 2nd rate rolling, timbered with pine and fir” (Thompson 1858).

The “2nd rate” assessment means that the land contained considerable clay and rock outcrops making it less suitable for farming (Beckham 2006:23). The shortage of desirable agricultural soils is mirrored by the lack of, as well as late dates of, Homestead entries. Only 14 Homestead entries exist for Township 41 south and Range 7 east and they date from 1910 – 1930 (Beckham 2006:65). Apparently folks only traveled through the area using Topsy and Picard Road, or stayed temporarily.

The Topsy and Picard Road intersection lies approximately 2 miles northwest of the project area at the top of the Topsy Grade. The Topsy Grade is where the Topsy Road descends/climbs 700 ft. from the Klamath River Canyon rim to the Klamath River. The Topsy Road connected the Klamath Basin with Yreka, California from late 1850s to early 1900s. It catered to stage coach passengers, freighters and mail carriers. Many stage stops were established along the route, including one at the intersection of the two roads (Durant 2003).

Today, the Picard Road connects Topsy Road in Oregon with the town of Dorris, California. In 1893, a petition was filed to establish the California portion of Picard Road as a Siskiyou County Road (Siskiyou 1893). The 1893 petition states that the road started at Manuel Cory's, otherwise known as the Portuguese's Saloon, and headed west, northwest, then north to the California/Oregon state boundary. The road description and surveyor's field notes fit the current road foot print. However, at this time it is unclear if the petition was filed to transform an already existing road into a county road or to lay out and construct a new road.

Logging began in the 1860s with a few small enterprising sawmills. The private land holdings are integrated with federal lands in a checker board pattern called the Oregon and California (O&C) lands. This is due to a failed land grant promotion; in 1916 the land was reconveyed back to the Government (Basler 1965). The logging industry boomed in the early twentieth century both in and around the project area. Weyerhaeuser arrived in 1923 and began constructing logging roads. Today logging continues to be significant in the area.

All proposed treatment areas have been surveyed for cultural resources using BLM Class III survey methods. Eleven archaeological sites were found within the proposed treatment areas.

Cultural Resources – Environmental Consequences

No Action

Under the no action alternative, known archaeological sites would continue to be protected from ground disturbing activities.

Proposed Action

All proposed treatment areas are designed to avoid impacts to the eleven archaeological sites found within the project area.

Cumulative Impacts

Under all action alternatives, the potential to encounter, or disturb, subsurface archaeological

deposits appears limited based on regional survey results and the nature of disturbances anticipated. However, if buried materials become exposed during project activities, it is recommended that the project work stop and the Klamath Falls Resource Area Lead Archaeologist be notified immediately to implement mitigation measures to prevent further disturbance.

Recreation Resources - Affected Environment

The analysis area provides opportunities and access for dispersed recreation such as hunting, fishing, off-highway vehicle driving, camping, sightseeing, snowmobiling, and mountain biking. Nearby recreation facilities with some level of development include Topsy campground and an extensive network of forest roads. Private timber land roads provide access off of Highway 66 and 97 to the project area and BLM land parcels.

For additional information about recreation resources in the analysis area, reference The Topsy/Pokegama Landscape Analysis (TPLA) pages 173-179. For general information about recreation in the area, refer to the Klamath Falls RMP/ROD pages 47-53, and RMP maps 2-8 and 2-10.

Recreation Resources - Environmental Consequences

No Action

Opportunities to pursue recreation activities are expected to continue unchanged under this alternative. In addition, recreation access would not be expected to change greatly under this alternative.

Proposed Action

Only temporary, minor disruption to recreational users would occur during treatment activities. Short-term disturbances to recreationists from log truck traffic, equipment noise, dust and smoke associated with treatment activities would be expected. A positive recreation benefit of treatment activities could occur through the increased availability of firewood and enhanced mushroom gathering opportunities.

The impacts associated with the proposed selective harvest or thinning, riparian treatments and fuel reduction as described in the Proposed Action would not exceed or even approach those described in the Klamath Falls Resource Area Final RMP (pages 4-104-108). Closing short spur roads would have minimal effect on recreationists; some positive and some negative depending on the nature of the activities in which they participate. The most likely affected recreation users would be hunters who would lose some existing vehicle access for opportunistic hunting and game retrieval. Although approximately 0.6 additional miles of the existing roads would be closed and 2.2 miles of road would be obliterated, road density per square mile would remain adequate and recreationists would still be able to access most of the area as before. Some main access roads would be improved with additional rock surfacing, which would benefit recreational access for the general public. See Appendix B for suggested Project Design Features and Mitigation related to recreation resources.

Cumulative Effects

Cumulative effects from either alternative are expected to be negligible, except in the event of a large scale wildfire that would significantly affect recreational use. A large scale wildfire would probably have a positive effect on mushroom gathering opportunities, and possibly hunting/firewood gathering. Other recreation activities such as sight seeing, dispersed camping and mountain biking would likely be negatively impacted by a large scale wildfire.

Visual Resources - Affected Environment

The BLM has a basic stewardship responsibility to identify and protect scenic values on public lands. This is accomplished through the Visual Resource Management (VRM) program. Through this program, all BLM lands are inventoried and managed in specific VRM classes. Lands in the analysis area are managed under guidelines for BLM Visual Resources Management (VRM) Class III. Management objectives for VRM Class III are to manage for moderate levels of change to the characteristic landscape. Management activities may attract attention but should not dominate the view of the casual observer.

For additional information about scenic resources in the analysis area, refer to the Klamath Falls RMP/ROD pages 43-44, and RMP maps 2-5.

Visual Resources - Environmental Consequences

No Action

Current scenery would remain unchanged in the short term, but long term gradual changes would occur as the stands age and additional trees die from insects and disease. There is a greater likelihood of widespread insect mortality and catastrophic fire, which would greatly affect long term scenic resources.

Proposed Action

Proposed treatment activities would have minimal negative effects on visual resources. Maintaining an uneven-aged, multi-strata stand structure and reducing competition and stress to reserve trees, would reduce the impact to visual resources. Opportunities to view wildlife may increase as stands are more open, allowing easier viewing.

Long-term management of visual resources within the analysis area would likely be positively affected by proposed treatments, riparian reserve thinning, and follow-up prescribed fire activities. These treatments would reduce the risk of catastrophic wildfire and continued insect and disease related mortality within the project areas.

Cumulative Effects

Cumulative effects from either alternative are expected to be negligible, except in the event of a large scale wildfire which could drastically alter scenic resources.

Air Resource - Affected Environment

Air quality is a sensitive issue in the Upper Klamath Basin primarily because of the existing relatively clean air. Potential air quality consequences are important for the preservation of high quality visual values for the region.

Air pollutants are emitted from a variety of sources in the Basin including woodstoves, open burning, industrial plants, and internal combustion engines. Woodstoves contribute greatly to particulate matter during the winter. Agricultural and forestry burning operations are significantly sources in the fall. With the emphasis on reducing risk of wildfire, fuels reduction projects using prescribed fire are also becoming a more common source of pollutants that can contribute to reduced air quality. Predominant winds are westerly to northwesterly, however, wind direction fluctuates greatly from the north, south and rarely from the east as weather “fronts” move through the area.

National Ambient Air Quality Standards (NAAQS) were established by the 1963 Clean Air Act and subsequent Amendments to protect the public health (primary standards) and public welfare

(secondary standards) from any known or anticipated adverse effects associated with the presence of pollutants in the ambient air. In 2006, EPA revised the 24-hour NAAQS for PM_{2.5} downward from 65 to 35 µg/m³. If the particulate matter for NAAQS is exceeded, the EPA is required to designate the area as a “non-attainment” area.

On March 22, 2007, the EPA issued The Treatment of Data Influenced by Exceptional Events (EPA 2007) to integrate the public policy goals of, 1) using fire to restore healthy ecosystems, and 2) mitigating the impacts of air pollutant emissions on air quality and visibility. The Exceptional Events Rule was written to ensure that prescribed burns needed to protect the natural ecosystem would not result in “non-attainment” status.

The proposed fuel treatments would enhance wildlife habitat, maintain scenic resources, and reduce the potential for catastrophic wildfires. Planned prescribed fires would be consistent with the Clean Air Act and the Oregon Smoke Management Plan (OAR Chapter 629, Division 48).

Air Resource - Environmental Consequences

No Action

Under the no action alternative, air quality impacts are typically very localized and only result from vehicles stirring up dust and from campfire smoke. Any projects approved for BLM lands within the airshed would be implemented in compliance with the Oregon Smoke Management Plan. For any other activities on private land in the airshed, it is not possible to estimate resulting air quality impacts. There is an increased potential for large wildfires, which would have limited-duration air quality impacts. Wildland fire is a stochastic event and smoke and particular matter cannot be anticipated.

Proposed Action

Air quality impacts would be slightly higher in the short term than the No Action Alternative because there would be an increase in vehicles and equipment used to implement the actions stirring up dust. No additional impacts to air quality from campfire smoke over the No Action Alternative are expected because no measurable increase in recreation use is expected.

Total emission of PM_{2.5} is predicted to be 66 tons from the broadcast underburning, 9 tons from the thinning / piling / burning, and 2 tons from burning the landing piles. Total emissions of CO₂ are predicted to be 6,758 tons from the broadcast underburning, 1,124 tons from the thinning / piling / burning, and 279 tons from burning landing piles. Utilization of landing piles for biomass energy production or other products, like hardboard, would reduce PM_{2.5} and CO₂ emissions from burning, could result in carbon sequestration, but would require the use of additional vehicles and equipment. The purchaser has the option to utilize the residual landing material in lieu of burning it. If the purchaser chooses to relinquish their rights to utilize the residual landing material the KFRA is using its stewardship contract authority to promote utilization of this material.

Due to the ability to manage emissions from prescribed fire (through timing burns with projected weather patterns) the air quality goal should be met. This alternative has greater short-term impacts, but should have a lesser impact on air resources from wildfires in the long-term. Due to the relative isolation of the area and the predominant wind patterns for smoke dispersion, the probability of degrading any key airshed with this project is low. These local impacts would be transitory in nature and no long-duration smoke impacts are expected. A reduction in emissions may occur if the residual material were utilized in some other manner.

Prescribed burning would comply with the guidelines established by the Oregon Smoke Management Plan (OAR Chapter 629, Division 48). All ignitions will comply with direction found in the Smoke Management Forecast and Instructions. Prescribed burning is not expected to affect visibility within nearby smoke sensitive Class I areas (Mountain Lakes) during the visibility protection period (July 1 to September 15). Prescribed burning is not routinely conducted during this period primarily due to the risk of an escaped wildfire.

Prescribed burning emissions are not expected to adversely effect annual PM_{2.5} attainment within Klamath Falls, or the Medford non-attainment area. Any smoke intrusions into these areas from prescribed burning are anticipated to be light and of short duration. Prescribed burning would also be planned during the fall, winter and spring months to reduce damage to the site from high intensity burning and to facilitate control of the units being burned. Smoke retained on site could be transported into portions of non-attainment areas if it is not dispersed and diluted by anticipated weather conditions, however, current avoidance strategies for prescribed fire assume that smoke can be lifted from the project site and dispersed and diluted by transport winds. Localized concentration of smoke in rural areas in northern California may occur.

Socioeconomics – Affected Environment

The proposed action lies within an area that is used by a variety of the public for recreation, hunting, fishing, mushroom gathering, as well as other uses. The project area has provided a sustained supply of timber for processing in the surrounding communities including; Klamath Falls, Yreka, and Medford. Some timber has gone as far as Redding or Glide for processing. For every million board feet of timber harvested and processed in Oregon, approximately 10 jobs are generated, eight in the lumber and plywood industry and two in the logging industry (Charnley, S., ed. – In press).

In addition to the timber value, the Klamath County Economic Development Association (KCEDA) has recently completed a biomass study to determine the feasibility of constructing a small sawlog mill and wood residue biomass plant in Klamath County (Continental Resource Solutions, Inc. 2004). The objectives would be to increase the utilization of smaller diameter material and logging residue typically burned in the forest. Additional benefits as indicated in the study would be employment opportunities within the county associated with biomass utilization as well as hazardous fuel reduction on thousands of acres of forest land. The proposed project would make available for utilization biomass material that typically is not processed for lumber or veneer. This could result in additional employment.

Socioeconomics – Environmental Consequences

No Action

The No Action alternative would affect local businesses primarily dependent upon forest products. Based upon the assumption above that for every 1 million feet of timber harvested, 10 jobs are generated, approximately 20 jobs either locally or within the community that processes the timber could be impacted. The No Action alternative should not result in any detectable socioeconomic change in regards to recreational uses. Hunting, fishing, and other recreational uses are expected to continue at the present level regardless of the No Action alternative or the Proposed Action.

Proposed Action

The proposed action would remove approximately 1.3 million board feet of timber and result in approximately 15-20 related jobs. The local area processes a considerable amount of timber and the proposed action is only a small percentage what is processed annually. The RMP states that the

annual sale quantity for the Klamath Falls Resource Area from Matrix lands is approximately six million board feet (6 MMBF). Processing facilities are dependent upon a stable, sustainable, and reliable supply of timber. Continual litigation of timber sales on federal lands has decreased the stability of a sustainable supply. The cumulative effects of this instability are closures of processing facilities and the corresponding loss of jobs. Although private timberlands supply much of the present demand for timber, some of the present forest industrial infrastructure is dependent upon a sustainable supply of timber from federal lands. Timber Harvest from public lands in Klamath County has dropped from 312,149 MBF (67.6% of the total) in 1986 to 37,745 MBF (18.2% of the total) in 2002 (Continental Resource Solutions, Inc. 2004).

The Oregon and California Railroad and Coos Bay Wagon Road Grant Lands Act (O&C Act) (43 U.S.C. § 1181a, et seq.) provides the legal authority for the management of O&C lands by the Secretary of the Interior. The O&C Act requires that the O&C lands be managed “...for permanent forest production, and the timber thereon shall be sold, cut, and removed in conformity with the principal of sustained yield for the purposed of providing a permanent source of timber supply, protecting watersheds, regulating stream flow, and contributing to the economic stability of local communities and industries, providing recreational facilities...” The proposed action helps meet the objectives of the act by providing for needs identified above.

CHAPTER 4 – CONSULTATION

Endangered Species Act (ESA) Consultation

Consultation with the U.S. Fish and Wildlife Service is complete and states that the proposed action is “Not likely to adversely affect” the Northern spotted owl. A biological assessment addresses the actions proposed in the PVJ Forest Heath Treatments EA. A determination of “May Affect, Not Likely to Adversely Affect” was made by the BLM for the northern spotted owl. A “No Effect” determination was made for all other listed species. No designated critical habitat occurs within the analysis area.

Tribal Consultation

This project has been presented to and discussed with members of The Klamath Tribes during regular bi-monthly consultation meetings.

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APPENDIX B – SUMMARY OF BEST MANAGEMENT PRACTICES AND PROJECT DESIGN FEATURES

Appendix D of the RMP (pages D1-D46) describes the Best Management Practices (BMPs) that are “designed to achieve the objectives of maintaining or improving water quality and soil productivity and the protection of riparian-wetland areas”. Best management practices are defined as methods, measures, or practices selected on the basis of site-specific conditions to ensure that water quality will be maintained at its highest practicable level (D-1, Appendix D, RMP). In addition to BMPs that focus on water quality and soil production, the interdisciplinary team also develops Project Design Features (PDF) with the objective of meeting other resource goals. For instance, the PDFs listed below under Wildlife and Vegetation are designed to meet resource objectives associated with these resources and not necessarily water quality. In addition, the PDFs listed under Recreation and Visual Resources are designed to meet objectives stated in the RMP for these respective resources. The list below is not an exclusive list of BMPs or PDFs for the PVJ Timber Sale EA. It is a list of the BMPs and PDFs that the interdisciplinary team found to be most pertinent for the proposed action. All of Appendix D as well as the Annual Program Monitoring Reports are used when developing the final operational specifications for a treatment.

Upland Forest Vegetation - Harvest Prescription

Density Management Harvests

- For uneven-aged stands, maintain a multi-strata stand structure.
- Thin around large old growth trees to improve vigor and reduce hazardous fuels risk.
- For stands with a basal area over 200 square feet/acre, thin to an average of 120 square feet/acre
- For stands with a basal area less than 200 square feet/acre, thin to an average of 90 square feet/acre.
- Generally retain the most dominant or co-dominant tree that is full crowned, vigorous, and disease free.
- Species selection priority: Sugar pine (highest), Douglas-fir, Ponderosa pine, Incense cedar, White fir (lowest).
- Retain (no thinning) isolated thermal clumps to provide variability in spacing and structure.

Roads

- The BMPs listed in Appendix D of the RMP provide standard management practices that are to be implemented.
- Seasonally restricting renovation activities is recommended to eliminate sediment transportation to streams.
- Installing drainage dips in accordance with RMP BMPs to reduce surface and ditchline run-off is recommended.
- Surfacing roads in accordance with RMP BMPs (*Roads C-1-8*) is recommended for all naturally surfaced roads not proposed for decommissioning or closure, to allow use during all seasons and is expected to minimize erosion from the road surfaces.
- Direction from the RMP ROD for Key Watersheds includes reducing road mileage and a no net increase in road mileage. Restoration of forest productivity including full decommissioning of roads within the Riparian Reserves upon completion of the project is recommended.
- Minimal or no grading of the existing roads will be done to maintain the existing ground cover and vegetation and to decrease sediment movement.
- Re-decommission roads that have been decommissioned but are opened for commercial treatments, non-commercial treatments, or prescribed fire use.

- When obliterating or fully decommissioning roads, remove road drainage features and fill in ditches, place slash and woody material on the road surface subsequent to ripping, and ensure that the road closure is adequate to ensure that vehicle access is eliminated.
- When obliterating or fully decommissioning roads within Riparian Reserves, plant native trees subsequent to road removal.

Soil Resources

- Limit detrimental soil conditions to less than 20 percent of the total acreage within the activity area. Use current soil quality indicators to monitor soil impacts. Sites where the 20 percent standard is exceeded will require treatment, such as ripping, backblading or seeding.
- To protect riparian areas, soil resources, and water quality while limiting erosion and sedimentation to nearby streams and drainages, do not allow logging operations during the wet season (October 15 to May 1).
- Limit mechanical cutting and yarding operations to periods when the soil moisture is below 20 percent at a six inch depth. Even lower soil moisture levels are preferable on fragile soils.
- Permit logging activities during this time period if frozen ground or sufficient snow is present. This is normally when snow depths are in excess of twenty (20) inches in depth.
- To protect soil resources and water quality, close unsurfaced roads during the wet season (October 30 to June 1) unless waived by authorized personnel.
- Residual slash will be placed upon skid trails upon completion of yarding.
- Avoid placement of skid trails in areas with potential to collect and divert surface runoff, such as the bottom of draws and ephemeral drainages.
- Retain and establish adequate vegetative cover in accordance with RMP BMPs to reduce erosion.
- Retain enough small woody (dead and down) material to sustain soil nutrients. See RMP BMPs for specifications. In ponderosa pine forest land, 9 tons per acre of duff and litter (approximately ½ inch deep).
- Seed and/or mulch exposed and disturbed soil surfaces with native seed when seed is available.
- Cable yarding and restricted use of mechanized equipment is required on slopes that are greater than 35 percent.
- Construct fireline by hand on slopes greater than 35 percent.
- Hand pile and burn within 100 feet of Riparian Reserves.

Hydrology & Riparian Reserve Treatments

Timber Harvest

- Delineate Riparian Reserve widths as described in the RMP (pg F-8, ROD pgs C-30 to 31). Refer to Table B-1 below.
- For understory vegetation treatments within older, multi-age stands within Riparian Reserves, delineate “no-cut” buffers along stream channels and wetland areas. No-cut widths would be 20 foot on each side of non-fish bearing stream channels and wetlands.
- For vegetation treatments within Riparian Reserves, limit the use of mechanical equipment to the outer one-half of the Riparian Reserve.
- Existing landings and roads within Riparian Reserves would be used only if replacing them with landings and roads outside the Riparian Reserves would result in greater overall disturbance to the Riparian Reserve or water quality.
- Avoid placement of skid trails and landings in areas with potential to collect and divert surface runoff such as the bottom of draws and ephemeral drainages.
- Harvest/treatments methods that would disturb the least amount of soil and vegetation (yarding over snow or frozen ground, limiting activities to the dry season, pulling line to each tree, and

minimizing skid trails) would be used in the Riparian Reserves. Use of the 20-foot radial arm on the mechanical harvester to reach toward the boundary line of Riparian Reserves would occur wherever possible.

- Thin to a higher basal area (100-160 square feet per acre), favoring larger trees for shading and removing competing conifers around dominant pines.
- Consider retaining some downed logs for instream structural enhancement projects.
- No new permanent roads will be constructed within Riparian Reserves (except where construction or re-alignment of short road segments allows obliteration of longer road segments within Riparian Reserves).
- Yarding/skidding corridors that pass through Riparian Reserves will be designated prior to project implementation, will have a minimum spacing of 300 feet and be oriented perpendicular to streams, will have minimal relative slope, and will be revegetated following project implementation (as needed). Stream crossings will be selected at stable, naturally armored locations or will be armored with slash before being used as a corridor.
- Use of existing roads and landings within Riparian Reserves will be reviewed and approved by the Klamath Falls Resource Area interdisciplinary team.
- Mechanical treatments would be allowed in aspen stands only during periods when detrimental soil effects would be least likely to occur.

Table B-1: Riparian reserve types and widths from the KFRA RMP

Riparian Reserve Type	Reserve Width (for each side of streams/wetlands)
Fish-bearing streams	At a minimum, the reserve width will include: Slope distance equal to the height of two site potential trees (240 feet); or, The stream channel and the area extending to the top of the inner gorge; or, The area extending to the outer edges of riparian vegetation; or, The 100-year floodplain; or, The extent of unstable or potentially unstable areas, whichever is greatest.
Perennial non-fish-bearing streams and Intermittent (seasonal) non-fish-bearing streams and Constructed ponds and reservoirs and Wetlands greater than one acre	At a minimum, the reserve width will include: Slope distance equal to the height of one site potential tree (120 feet); or, The stream channel (or waterbody/wetland) and the area extending to the top of the inner gorge; or, The area extending to the outer edges of riparian vegetation; or, The 100-year floodplain (for streams) or the extent of seasonally saturated soil (for waterbodies and wetlands); or, The extent of unstable or potentially unstable areas, whichever is greatest.
Wetlands less than one acre and Unstable or potentially unstable areas	At a minimum, the reserve width will include: The wetland and the extent of seasonally saturated soil; or, The area extending to the outer edges of riparian vegetation; or, The extent of stable or potentially unstable areas, whichever is greatest.
Lakes and natural ponds	At a minimum, the reserve width will include: Slope distance equal to the height of two site potential trees (240 feet); and, The body of water or wetland and the area to the edges of riparian vegetation; The extent of seasonally saturated soil; The extent of unstable or potentially unstable areas; whichever is greatest.
Springs	Reserve widths vary according to the size of the associated wetland (see above).

*A site-potential tree is defined as the average maximum height of the tallest dominant trees (200 years old or more) for a given site class. In the PVJ Timber Sale EA project area, the site potential tree height was determined to be 140 feet.

Fuels Reduction (Post-harvest)

Mechanical fuels treatments in Riparian Reserves:

- Treatment methods that would disturb the least amount of soil (yarding over snow or frozen ground, limiting activities to the dry season, pulling line to each tree, and minimizing skid trails) would be used in the Riparian Reserves.
- No ripping, piling, or mechanical site preparation (except for designated skid trails crossings, roads, or yarding corridors) would occur in Riparian Reserves.
- A no-mechanical-entry spacing for treatments would occur from the natural topographic break to the edge of the riparian area within the Riparian Reserve. In areas where a topographic break is not evident the following guidelines would be implemented: On perennial, intermittent, and/or fish bearing streams with slopes less than 20%, a 25-foot no entry buffer would be established from the edge of the riparian area and on slopes greater than 20%, a 50-foot no entry buffer would be established from the edge of the riparian area. In wetland areas, a 50-foot no entry buffer would be established from the edge of the riparian area.
- Stream crossings will be designated prior to project implementation, will have a minimum spacing of 300 feet and be oriented perpendicular to streams, will have minimal relative slope, and will be revegetated following project implementation (as needed). Stream crossings will be selected at stable, naturally armored locations or will be armored with slash before being used as a corridor.
- Hand treatments would be recommended within the no-mechanical-entry zones in order to meet fuel management objectives.

Ignitions (using liquid petroleum products) within Riparian Reserves:

- Ignition of broadcast fires should not occur within a minimum of 50 feet from the stream channel within the Riparian Reserves unless site specific analysis determines ignition is needed to attain Riparian Reserve objectives. The specific distance for lighting fires within the RR will depend on topography, habitat, ignition methods, fuel moisture, and ignition fuel type.
- Ignition line location nearest the stream should be based on topography and ignition methods and should be sufficient to protect water quality, CWD, and stream overhead cover. No direct ignition of CWD directly touching the high water mark of the stream, or of CWD that may be affected by high flows, should occur. Where there is thick vegetative cover that extends out from the stream, ignition lines should be located in the forest stand, away from the stream to protect shading values.
- Ignition lines near large open meadows, associated with the stream channels should be located at the toeslope above the meadow elevation as much as possible to protect meadow vegetation.
- Increased ignition spacing from the stream should occur when igniting fuels on the lower end of the window of moisture content to protect CWD and overhead cover components.

Roads and temporary fire trail access in Riparian Reserves:

- Use of existing roads and landings within the RR will be reviewed and approved by the resource advisor.

Streamside pumping sites:

- Pumping on small streams should not reduce the downstream flow of the stream by more than half the flow.
- If possible avoid the construction of temporary pump chances, when necessary use temporary plastic dams to create chances and remove these dams when not actively pumping.
- All pumping located on fish bearing streams must have a screen over the intake to avoid entrainment of small fish.

- Recommend that pump intake be suspended near the thalweg (deepest/highest quantity of flow) of the stream. Avoid placing pump intakes on the substrate or edges of the stream channel.

Post-fuels treatments for access roads and temporary fire trails:

- Install drainage dips, or water bars, in accordance with RMP BMPs to reduce surface run-off.
- A layer of duff will be retained to protect soil from erosion during the wet season.
- Mulch and seeding or other methods of soil stabilization are to be applied to any exposed soil surfaces prior to the wet season to reduce surface erosion.
- Surfacing roads in accordance with RMP BMPs (*Roads C-1-8*) is recommended for all naturally surfaced roads not proposed for decommissioning or closure.
- Design blockages (close or decommission) upon completion of treatments to minimize non-authorized use of roads and trails within treatment areas.
- Place residual slash on trails upon completion of mechanical treatments.

Wildlife Terrestrial Species

Snag Retention

Approximately 2.6 snags per acre will be retained with a minimum diameter at breast height (DBH) of 16", or largest available if less than 16" (RMP/ROD, Page 33, 2007 ROD, page 12).

Coarse Woody Debris (CWD)

Approximately one hundred and twenty (120) linear feet of down logs per acre will be retained. Logs shall be greater than or equal to sixteen (16) inches in diameter and sixteen (16) feet long (RMP/ROD, Page 22).

Seasonal Restrictions

Seasonal restrictions will be required where the following wildlife species are actively nesting: bald eagle, northern spotted owl, northern goshawk, osprey, and special status species. Seasonal restrictions for specific species can be found on pages 231-240 of the KFRA FEIS.

Nesting Areas

Protect nesting areas as describe on page 38 of KFRA RMP.

For fuels treatment units adjacent to or containing spotted owls or NRF habitat:

- Burn prescriptions will require proper fuel moisture and atmospheric conditions so adequate large woody debris will be retained for prey habitat.
- General objective for burn would be to create a mosaic of burned and unburned habitat in the unit to maintain some habitat for prey production. During prescribed fire activities the overall objective is to create a mosaic of burned and unburned areas. A 60:40 ratio of burned versus unburned is the objective to maintain a diverse understory and maintain diversity within the stand. Ignition techniques and pull back on smaller trees may also be used to maintain the understory structure
- In NRF habitat maintain visual screening along open roadways to minimize disturbance. In northern spotted owl NRF habitat, maintain the understory structure by retaining a diversity of the sub-merchantable understory conifer trees (Douglas -fir, white-fir, sugar pine, cedar, ponderosa pine). In mechanical treatment areas this would be done by site-specific designs described in the individual task orders.
- Retain untreated areas ranging from ¼ acre to 5 acres (thermal clumps) within the treatment units to provide diversity for wildlife.
- During prescribed fire activities create a mosaic of burned and unburned areas to maintain a

- diversity of species and age classes of understory vegetation.
- Maintain habitat connectivity and corridors.

Noxious Weeds

- Require cleaning of all equipment and vehicles prior to moving on-site to prevent introduction of noxious weeds from outside the project area. Also, if the job site includes a noxious weed infestation, require cleaning of all logging and construction equipment and vehicles prior to leaving the job site to prevent the spread of noxious weeds. Removal of all dirt, grease, and plant parts that may carry noxious weed seeds or vegetative parts could be accomplished by using a pressure hose to clean the equipment.
- Mow noxious weeds in the immediate area of yarding operations to ground level prior to seed development.
- Conduct monitoring activities related to proposed treatments as described in the Klamath Falls ROD
- Road graders used for road construction or maintenance would grade towards any known noxious weed infestations. If no good turn around area exists within one half mile that would allow the operator to grade towards the noxious weed infestation, then the operator would leave the material that is being moved within the boundaries of the noxious weed infestation.

Special Status Species

Provide snag mitigation measures for White-headed Woodpecker, Black-backed Woodpecker, Pygmy Nuthatch, and Flammulated Owl. Increase snag retention requirements from 1.9 to 2.6 snags per acre (USDI 2007).

Cultural Resources

In accordance with guidelines and directives in the Klamath Falls Resource Area RMP, BLM regulations, and the National Historic Preservation Act, areas not included in previous archaeological surveys will be surveyed before any ground-disturbing action is undertaken. Sites identified during survey, as well as any known sites found in previous surveys, will be buffered, flagged and avoided to prevent impacts.

Visual Resources

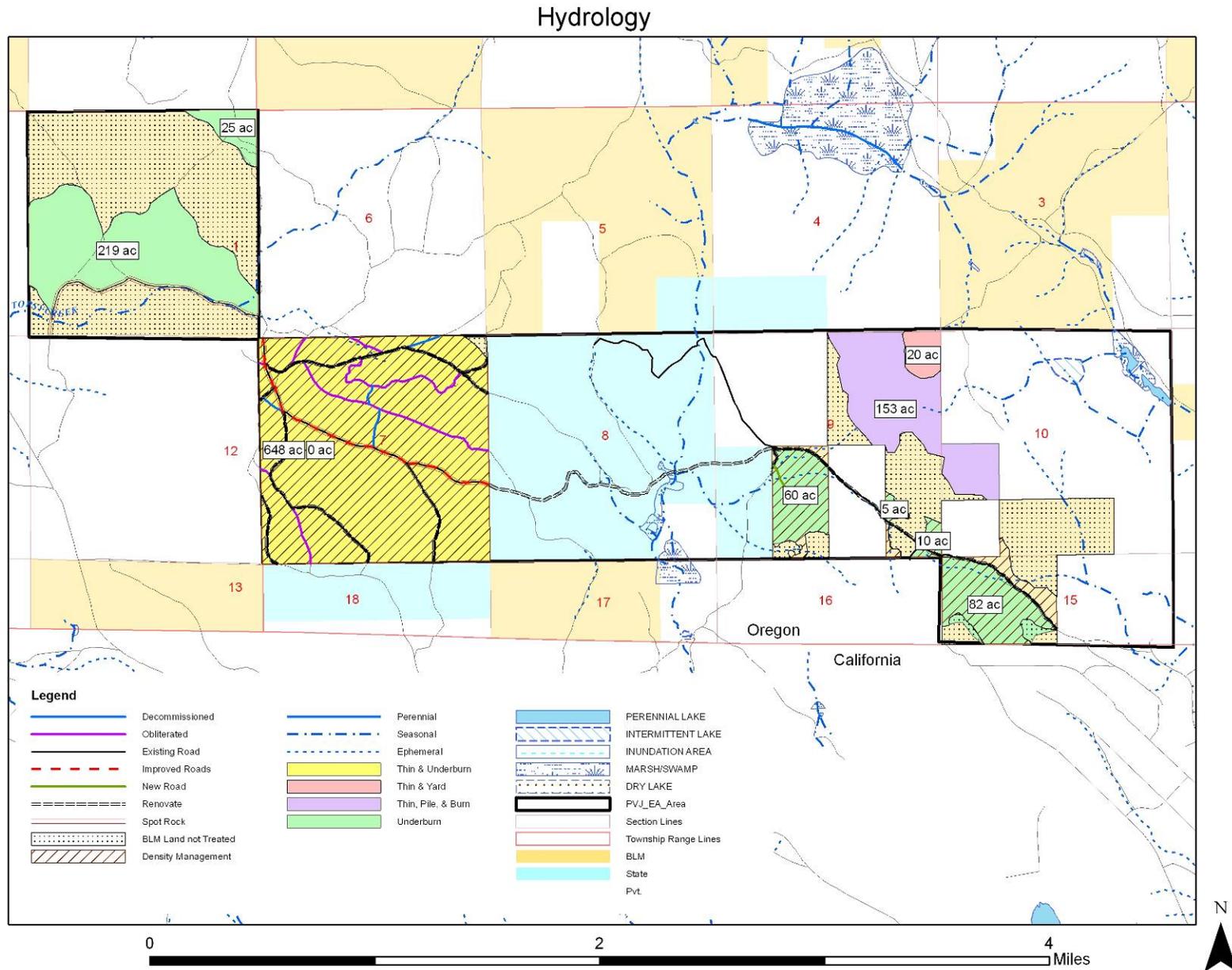
All treatments will meet appropriate Visual Class objectives specified in the KFRA ROD/RMP (page 44).

Recreation Resources

- Ensure that purchaser signs haul routes to alert recreationists to truck traffic in the area. Highway flaggers may be needed to warn traffic along Highway 66 of operations.
- Ensure that dust abatement and frequent grading occurs on haul routes, especially near more popular recreation areas such as Topsy campground and access to the upper Klamath River, or other parking/staging areas.
- During any winter harvesting operations, all subcontractors working in the Contract Area shall be advised of snowmobile traffic.

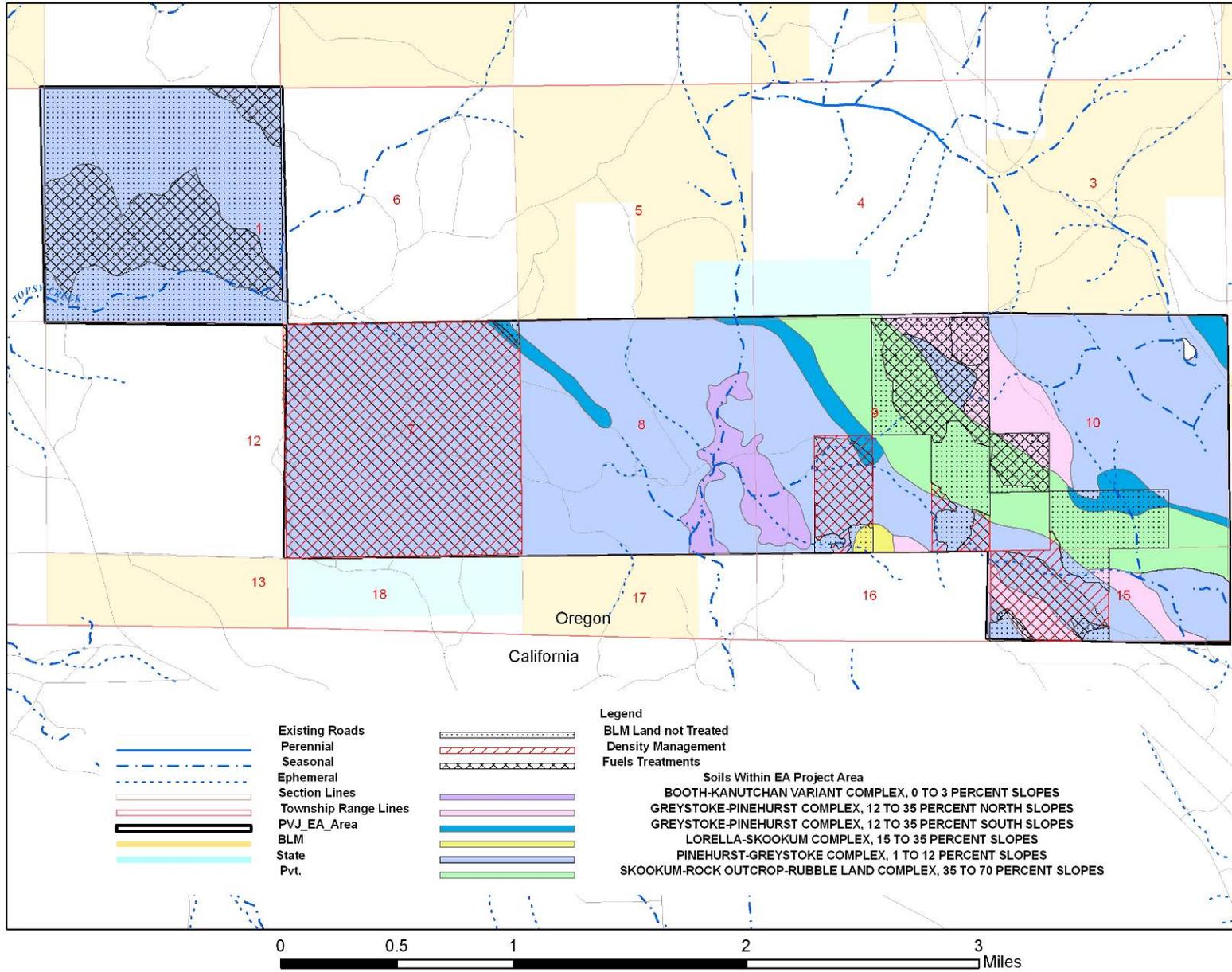
APPENDIX C – MAPS

Map 1 – Hydrology of the Project Area



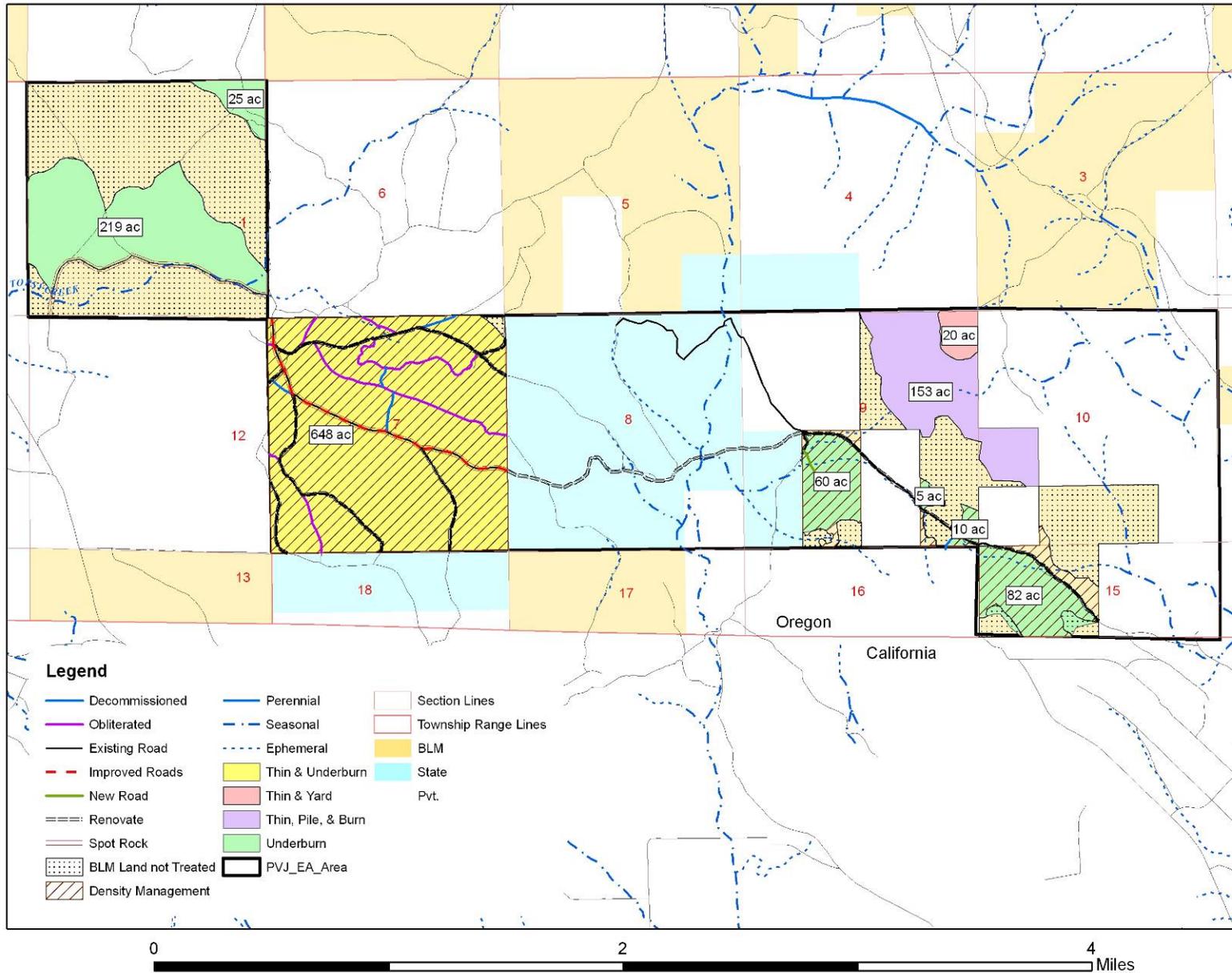
Map 2 – Soils of the Project Area

Soils



Map 3 – Proposed Road and Vegetation Management

Roads, Vegetation and Fuel Treatments



Map 4 – Watersheds and Sub-watersheds of the Project Area

Watersheds

