Environmental Assessment
And
Finding of No Significant Impact

Five Rogues Timber Sale

EA Number OR118-05-007
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United States Department of the Interior
Bureau of Land Management
Medford District
Glendale Resource Area
Josephine and Douglas Counties, Oregon

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Abstract:

The Glendale Resource Area, Medford District, Bureau of Land Management (BLM) proposes to harvest timber on federal lands within the Grave Creek Watershed. The Planning Area is located in portions of Township (T) 33S, Range (R) 5W, Sections 5-8, 17-20, 29-32; T 33S, R 6 W, Sections 1-3, 10-16, 21-29, 32-36; T 34S, R 5W, Sections 5-8, 18-19; T 34S, R 6 W, Sections 1-5, 8-16, 18, 22-24.

This environmental assessment discloses the predicted environmental effects of three alternatives: Alternative 1 (No Action), Alternative 2 (Proposed Action) and Alternative 3 (Hydrology, Wildlife Emphasis). Alternative 2 includes harvesting timber on approximately 664 acres of forest land by regeneration, group select, selection cut, and commercial thinning. Harvesting methods include high lead cable, helicopter, and tractor logging systems. Regeneration harvest units would be planted if necessary to ensure adequate stocking. Piling and burning of created harvest residue (slash) would be conducted to reduce fire hazard and prepare the site for planting of conifer seedlings. Harvesting and associated forest management activities are planned to occur between 2005 and 2011.

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FINDING OF NO SIGNIFICANT IMPACT

Based upon review of the EA (Environmental Assessment #OR-118-05-07) and supporting project record, I have determined that Alternative 2 (Proposed Action) is not a major federal action and would not significantly affect the quality of the human environment, individually or cumulatively with other actions in the general area. No environmental effects meet the definition of significance in context or intensity as defined in 40 CFR 1508.27. Therefore, an environmental impact statement is not needed. This finding is based on the following discussion:

Context. The Proposed Action is a site-specific action directly involving approximately 664 acres of BLM (Bureau of Land Management) administered land that by itself does not have international, national, region-wide, or state-wide importance. The Proposed Action is located within the matrix land use allocation and within the boundaries of the Wolf Creek, Grave Creek/Sunny Valley and Grave Creek/Placer 6th field watershed boundaries.

The discussion of the significance criteria that follows applies to the intended action and is within the context of local importance. Chapter 3 of the EA details the effects of the Proposed Action. None of the effects identified, including direct, indirect and cumulative effects, are considered to be significant and do not exceed those effects described in the *Medford District Resource Management Plan/Final Environmental Impact Statement* (June 1995).

Intensity. The following discussion is organized around the Ten Significance Criteria described in 40 CFR 1508.27.

1. Impacts may be both beneficial and adverse. The predicted environmental effects of the Proposed Action, most noteworthy, include: **1)** social and economic benefits by providing a sustainable supply of timber and other forest commodities to provide jobs and contribute to community stability; **2)** provide early-successional habitat; **3** The fire risk from created slash is considered minimal because of proposed post harvest fuels treatments and maintenance underburns on 664 acres. This is approximately 0.64 % of the Grave Creek watershed and cumulative effects are considered minimal; **4)** activities that are proposed under this alternative would cause soil displacement, compaction and loss of productivity. Harvesting would result in compaction on about 4% of cable harvest units, 1% of helicopter-logged units and 12% of tractor logging units. The Proposed Action would result in about 2 acres of soil compaction across the Planning Area from construction of temporary and permanent road. The amount of residual soil compaction after logging, including ripping tractor skid roads and temporary roads, would increase only slightly and be within the limits allowed in the *Medford District Resource Management Plan/Final Environmental Impact Statement*, pp. 4-12 to 4-14; **5)** The Proposed Action would not negatively affect Edangered Species Act (ESA) listed Southern Oregon/Northern California coho salmon (Threatened), nor would it contribute to the need to list Special Status Species Klamath Province summer-run and winter-run

steelhead trout or Southern Oregon Coast/California Coast fall-run Chinook salmon under the Endangered Species Act because any increase in peak flows would be immeasurable and indistinguishable from baseline conditions; **6)** The Proposed Action would result in a "take" of suitable northern spotted owl habitat, based upon the habitat removal of approximately 115 acres in regeneration and group select harvest units and habitat downgrading of approximately 549 acres of suitable habitat to dispersal habitat through commercial thinning and selection cut units. However, the amount of anticipated adverse impacts to spotted owls in the Planning Area has been accounted for through consultation and incidental take with the United States Fish and Wildlife Service (USDA/USDI 2003); **7)** About 46% of the Grave Placer 6th field watershed is in the transient snow zone (TSZ) and no more than 18% is presently in open condition. Only 6% of Grave Sunny Valley 6th field watershed is in the TSZ. It is highly unlikely that proposed harvesting in the TSZ under Alternative 2 would have any measurable effect on peak flow, stream channel or streambank stability, or on survival of fish, amphibians or other aquatic species; **8)** It is unlikely that any timber sale activity (i.e., log yarding and hauling; road construction; road maintenance, road construction, road decommissioning, gating, or site preparation) under the Proposed Action, other than tree felling, would have any effect whatsoever on peak or base flows because they have no mechanisms to decrease canopy closure or to increase runoff from compacted areas; **9)** Due to logging operations, the 33-6-26 access road to London Peak would be completely closed to through traffic for approximately one week. During this period, it is estimated that less than 50 visitors to the upper segment of the London Peak Trail will be affected. Notification of the road closure, and pertinent dates of closure, would be given to local residents and establishments, as well as provididing necessary road signage.

None of the environmental effects disclosed above and discussed in detail in Chapter 3 of the EA are considered significant.

2. The degree to which the selected alternative will affect public health or safety. Public health and safety would not be affected. The Proposed Action is comparable to other timber harvest projects which have occurred within the Glendale Resource Area with no unusual health or safety concerns.

The general policy for prescribed burning on the Glendale Resource Area is to notify residents prior to seasonal burning through News Releases. Several days prior to planned burning local residents within a one-quarter mile of designated burning area would be notified. For residents who have contacted the Glendale Resource Area with specific smoke sensitive health issues would be contacted prior to ignition in the general area.

3. Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farm lands, wetlands, wild and scenic rivers, or ecologically critical areas. There are no park lands, prime farm lands, wetlands, wild and scenic rivers or wildernesses located within the Planning Area. All archaeological sites discovered in the course of project implementation would be evaluated by the Bureau of Land Management and protected with a no cut buffer

4. The degree to which the effects on the quality of the human environment are likely to be highly controversial. The effects of the Proposed Action on the quality of the human environment are adequately understood by the interdisciplinary team to provide analysis for the decision. A complete disclosure of the predicted effects is contained in Chapter 3 of the EA.

5. The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks. The Proposed Action is not unique or unusual. The BLM has experience implementing similar actions in similar areas and have found effects to be reasonably predictable. The environmental effects to the human environment are fully analyzed in Chapter 3 of the EA. There are no predicted effects on the human environment which are considered to be highly uncertain or involve unique or unknown risks.

6. The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration. The Proposed Action does not set a precedent for future actions that may have significant effects nor does it represent a decision in principle about future consideration. The Proposed Action would occur within the matrix land allocation which emphasizes timber harvesting. Any future projects would be evaluated through the NEPA (National Environmental Policy Act) process and would stand on their own as to environmental effects.

7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. The interdisciplinary team evaluated the Proposed Action in context of past, present and reasonably foreseeable actions. Significant cumulative effects outside those already disclosed in the *Medford District Resource Management Plan/Final Environmental Impact Statement* are not predicted. A complete disclosure of the effects of the Proposed Action is contained in Chapter 3 of the EA.

8. The degree to which the action may adversely affect districts, sites, highways, structures, or other objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources. The Proposed Action would not adversely affect districts, sites, highways, structures, or other objects listed in or eligible for listing in the National Register of Historic Places, nor would the Proposed Action cause loss or destruction of significant scientific, cultural, or historical resources.

9. The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973. The Proposed Action would result in the potential for disturbance to northern spotted owls. The Proposed Action would also remove approximately 115 acres of suitable owl habitat in regeneration harvest and group select units, as well as habitat downgrading of approximately 549 acres of suitable habitat to dispersal habitat through commercial thinning and selection cut units. The Proposed Action was included within the programmatic habitat modification biological assessment

prepared by the interagency Level 1 Team (terrestrial subgroup) for FY 2004-2008 Projects within SW Oregon which may modify the northern spotted owls (USDI/USFWS 2003 Biological Opinion).

The project would not negatively affect Endangered Species Act (ESA) listed Southern Oregon/Northern California coho salmon (Threatened) because any increase in peak flows would be immeasurable and indistinguishable from background flows.

10. **Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.** The Proposed Action does not violate any known federal, state, or local law or requirement imposed for the protection of the environment. Furthermore, the Proposed Action is consistent with applicable land management plans, policies, and programs (EA, Chapter 1.5).

Chapter 1.0 Project Scope

1.1 Proposed Action

The Proposed Action (Alternative 2) includes harvesting timber on approximately 664 acres of forest land by regeneration, group select, selection cut, and commercial thinning silvicultural treatments. Harvesting methods include conventional tractor, high lead cable and helicopter yarding systems. Piling and burning of created harvest residue (slash) would be conducted to reduce fire hazard and prepare the site for planting of conifer seedlings. Regeneration harvest units would be planted if necessary to ensure adequate stocking as required by the Federal Land Policy and Management Act (FLPMA).

It is estimated that 0.10 miles of an existing road would be decommissioned, 0.80 miles would be gated, 46 miles of existing roads would be maintained, and 1.10 miles of temporary roads would be built. In addition, approximately 200 feet of permanent road would be constructed and than blocked after harvesting.

Harvesting and associated forest management activities are planned to occur between 2005 until 2011.

BLM planning decisions and harvest activities would apply only to BLM-administered lands. These BLM lands are part of the Oregon and California O&C (Oregon and California) revested railroad lands and have land use allocations of matrix under the *Medford District Record of Decision and Resource Management Plan (*RMP, 1995). Approximately 1,000 acres are scattered public domain land and include two harvest units, 5S-1 and 6S-5.

1.2 Project Location

The Project Area extends from Sexton Mountain north to just beyond Speaker Road and within approximately three miles east and west of Interstate 5. For purposes of environmental analysis, the Project Area is contained within the boundaries of the Wolf Creek, Grave Creek/Sunny Valley and Grave Creek/Placer 6th field watershed boundaries and includes both federally administered public lands, other public lands and private lands, including the communities of Wolf Creek and Sunny Valley. The Planning Area encompasses approximately 28,600 acres in a checkerboard pattern of public and private ownerships and is within the larger 104,371 acre Grave Creek fifth-field watershed. Elevations within the Planning Area range from 1,200 feet to 2,900 feet. Average annual precipitation is 45-60 inches.

The legal description of the Planning Area is Township (T) 33S, Range (R) 5W, Sections 5-8, 17-20, 29-32; T 33S, R 6 W, Sections 1-3, 10-16, 21-29, 32-36; T 34S, R 5W,

Sections 5-8, 18-19; T 34S, R 6 W, Sections 1-5, 8-16, 18, 22-24.

1.3 Background

The first public meeting was conducted for local residents at the Wolf Creek Civic Center in Wolf Creek on April 30, 2003. There were three subsequent public meetings held on October 7, 2003, December 4, 2003 and May 5, 2004. Letters of invitation to each of these meetings were mailed to residents within the Sunny Valley and Wolf Creek communities and Glendale Resource Area's interested party mailing list. Many potential harvest units were deferred or modified in response to concerns identified by the public and the interdisciplinary team (IDT).

An environmental assessment (EA, OR118-04-019) for the Five Rogues Project was made available for public review in May 2004 and over 120 comment letters were received. Since the time of publicizing the EA, all BLM timber sales in Oregon have been under review due to litigation. The IDT reviewed the original Five Rogues Project Environmental Assessment for consistency. Based upon a review with agency direction and NEPA (National Environmental Policy Act) adequacy a decision was made by the Glendale Field Manager to prepare a new environmental assessment (OR 118-05-007) to replace the analysis of timber harvesting. The area known as the "Board Tree" area (west of I-5 freeway and north of Coyote Creek) has been deferred from harvesting under this environmental assessment.

1.4 Purpose and Need for the Proposal

1.4.1 Need for Action

The Medford Resource Management Plan (RMP) states the primary purposes of managing BLM-administered lands are the need for forest habitat and "forest products that will help maintain the stability of local and regional economies, and contribute valuable resources to the national economy on a predictable and long term basis" (p. 3). The RMP identifies land management objectives based on a series of Land Use Allocations (LUA). Included in the allocations is the matrix land allocation. One of the primary objectives for managing matrix lands is to provide for a sustainable supply of commercial timber. The Medford District RMP also recognizes the Oregon and California Revested Lands Sustained Yield Management Act (O & C Act) which requires the Secretary of the Interior to manage O & C lands for permanent forest production in accord with sustained yield principles (RMP, p.17). Approximately 1,000 acres are scattered public domain land and include two harvest units, 5S-1 and 6S-5.

1.4.2 Purpose for Action

The purpose of the Proposed Action is to meet the need of implementing the Medford RMP through harvesting timber on matrix lands. The Medford RMP identified a minimum age for regeneration harvesting at 100 years (RMP, p. 74). Regeneration harvests are even-aged silvicultural systems that "create new-even-aged stands through

harvesting while retaining both living and dead structural elements" (RMP, p. 180). Commercial thinning is a silvicultural system generally applied to younger commercial size stands to "control stand density, maintain stand vigor, and place or maintain stands on developmental paths so that desired stand characteristics result in the future" while providing an entry that is economical (RMP, p.85).

Project objectives include:

1. "Produce a sustainable supply of timber and other forest commodities to provide jobs and contribute to community stability" (RMP, p. 38)

2. "Provide early-successional habitat" (RMP, p. 39).

1.5 Plan Conformance

This Proposed Action conforms to the *Final-Medford District Proposed Resource Management Plan/Environmental Impact Statement* and *Record of Decision* (EIS, 1994 and RMP/ROD, 1995).

The Proposed Action also is in conformance with the *Final Supplemental Environmental Impact Statement* and *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl* (Northwest Forest Plan FSEIS, 1994 and ROD, 1994); the *Final Supplemental Environmental Impact Statement: Management of Port-Orford-Cedar in Southwest Oregon* (FSEIS, 2004 and ROD, 2004); the *Final Supplemental Environmental Impact Statement To Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines* (FSEIS, 2004 and ROD, 2004) and the *Final Supplemental Environmental Impact Statement Clarification of Language in the 1994 Record of Decision for the Northwest Forest Plan National Forests and Bureau of Land Management Districts Within the Range of the Northern Spotted Owl*, and *Proposal to Amend Wording About the Aquatic Conservation Strategy* (FSEIS, 2003 and ROD, 2004).

Parts of the *Grave Creek Watershed Analysis* are incorporated by reference. Watershed analysis is an analytical process and not a decision-making process as provided in the Record of Decision for the Northwest Forest Plan (p. B-20).

1.6 Permits and Approvals Required

The following permits and approvals are required prior to project implementation:

- License agreements with adjacent landowners to have a third party haul timber have been completed.
- In compliance with the Oregon Smoke Management Plan, prescribed burning activities on the Medford District require pre-burn registration of all prescribed

burn locations with the Oregon State Forester.

1.7 Decisions to be Made

The Glendale Field Manager is the official responsible for deciding whether or not to prepare an environmental impact statement, and whether to approve the project as proposed, not at all, or to some other extent.

Chapter 2.0 Alternatives

2.1 Introduction

This chapter compares Alternative 1 (No Action Alternative) with the two action alternatives, Alternative 2 (Proposed Action) and Alternative 3 (Hydrology, Wildlife Emphasis) as specified in 40 CFR (Code of Federal Regulations) § 1502.14. Descriptions summarize potential environmental consequences and focus on potential actions and outputs. Project Design Features were identified to ensure project compliance with higher level National Environmental Policy Act (NEPA) documents, laws and BLM guidelines. There were two unresolved conflicts concerning alternative uses of available resources identified by the interdisciplinary team. These conflicts included the potential increased water flow in the transient snow zone from regeneration harvesting and affects to late-successional wildlife habitat. This led to the development of Alternative 3 (see **Appendix 1 for discussion**). As such, the alternatives that will be analyzed in detail in this EA include the No Action Alternative, the Proposed Action Alternative and Alternative 3 (Hydrology and Wildlife Emphasis).

2.2 Project Design Features

Project design features (PDFs) are specific measures included in the site specific design of the action alternatives to minimize adverse impacts on the human environment. Also, many PDFs are contained under Best Management Practices (BMP), Appendix D, in the Resource Management Plan (RMP). Some of those have been included here for ease of fully understanding the project.

2.2.1 Fuel Treatments

Prescribed burning within the harvest units would be conducted in a manner that would minimize damage to reserve trees, duff and soil and to avoid loss of large, coarse woody debris.

Piles would be covered to create a dry ignition point and piles would be burned in the fall to winter season after one or more inches of precipitation has occurred to reduce the potential for fire to spread outside each pile and to reduce the potential for scorch and mortality to the residual trees and shrubs. Piles would also be burned when the soil and duff moisture is high to prevent soil damage.

Fire lines would be constructed by hand on slopes greater than 35%. On slopes less than 35% a one-pass fire line construction with a brush blade could be used for tractor fire lines.

Machine fire lines would not be constructed in riparian reserves.

2.2.2 Air Quality / Smoke Management

Air quality is regulated by the 1963 National Clean Air Act as amended in 1966, 1970, 1977 and 1990. The 1977 amendment provided for the prevention of significant deterioration (PSD) program. The intent of the PSD program is to limit air degradation in those areas of the country where the air quality is better than standards. Under this provision, certain national parks and wilderness areas were designated as Class I airsheds, whereas the remainder of the country was designated Class II. Although the PSD permit provisions of the Clean Air Act apply only to major stationary sources of air pollution (motor vehicles are mobile sources), the Environmental Protection Agency (EPA) used them to determine the degree of potential impacts of other sources on air quality. Forest management activities in the analysis area do not require a PSD permit.

All management activities proposed under the action alternatives would comply with air quality standards and rules administrated by the United States Environmental Protection Agency and the Oregon Department of Environmental Quality. Pollutants of concern are both particulate matter (PM) and inhalable particulate matter (PM_{10} and $PM_{2.5}$). Nitrous oxide, sulfur dioxide and ozone are pollutants of concern, but are at such low levels in the forest environment in Western Oregon that changes in levels are not further considered in this analysis.

The Oregon Smoke Management Plan, a part of the required state implementation plan (SIP), identifies strategies for minimizing the impacts of smoke from prescribed burning on the smoke sensitive areas within western Oregon. Particulate matter with a nominal size of 10 microns or less (PM 10) is the specific pollutant addressed in the SIP.

Broadcast burning would be minimized in favor of lower intensity underburning. Emission reduction mitigation measures and smoke dispersal techniques would be used to the greatest extent practical. Hazardous fuels reduction, site preparation and the use of prescribed fire for species habitat mitigation would be implemented in a manner consistent with ecosystem management objectives.

The general policy for prescribed burning on the Glendale Resource Area is to notify residents prior to seasonal burning through News Releases. Several days prior to planned burning local residents within a one-quarter mile of designated burning area would be notified. For residents who have contacted the Glendale Resource Area with specific smoke sensitive health issues would be contacted prior to ignition in the general area.

2.2.3 Cultural Resources

All archaeological sites discovered in the course of survey and project implementation would be evaluated by the BLM and protected with a no cut buffer.

2.2.4 Invasive Species

Mechanical equipment (e.g. skidders, yarders, etc.) would be power washed and cleaned

of all soil and vegetative material before entering the Planning Area.

Seeding of native grasses and/or an approved seed mix on highly disturbed soil (e.g., landings, new road cut and fill slopes, etc.) would occur.

2.2.5 Threatened, Endangered, & Special Status Wildlife Species and Habitat

2.2.5.1 Spotted Owls (threatened)

No treatments would take place in the 100-acre northern spotted owl (*Strix occidentalis*) activity centers. Trees within these areas would not be used for guy trees.

Spotted owl surveys, though not required, would be conducted in the spring of the year. Timber sale units would be logged to ensure owls are not present. All activities would comply with the U.S. Fish and Wildlife Service's Terms and Conditions and Project Design Criteria (Biological Opinion 1-14-03-F-511). Delay of project activities would occur if hatching year (fledgling) spotted owls are known or suspected within or immediately adjacent to a unit. As cited in the BO:

> (I) **Work activities** (such as tree felling, yarding, road construction, hauling on roads not generally used by the public, prescribed fire, blasting) that produce loud noises above ambient levels, or produce thick smoke that would enter the stand, will not occur within specified distances (sees table below) or up to 0.25 miles, at the discretion of the action agency biologist, of any nest site or activity center of known pairs and resident singles between March 1and 30 June (or until two weeks after the fledging period) – unless protocol surveys have determined the activity center to be not occupied, non-nesting, or failed in their nesting attempt. This distance may be shortened if significant topographical breaks or blast blankets (or other devices) muffle sound traveling between the blast and nest sites. March 1 – June 30 is considered the critical early nesting period; the action agency biologist has the option to extend the restricted season to as late as September 30 during the year of harvest, based on site-specific knowledge (such as a late or recycle nesting attempt). The boundary of the 0.25-mile area may be modified by the action agency biologist using topographic features or other site-specific information (generally, a 126 acre area will be protected). The 0.25 miles is calculated as a radius from the assumed nest site (point).
>
> Broadcast burning (for site preparation) will not take place within 0.25 mile of known active northern spotted owl nests between March 1 and June 30 (or until two weeks after the fledging period).

Table 2- 1. Seasonal Restrictions for Spotted Owls

Type of Activity – for Spotted Owl	Zone of Restricted Operation
Blast of more than 2 pounds of explosive	1 mile
Blast of 2 pounds or less of explosive	360 feet
Impact pile driver, jackhammer, or rock drill	180 feet
Helicopter or single-engine airplane	360 feet
Chainsaws (hazard trees, tree harvest, etc.)	195 feet
Heavy equipment	105 feet

2.2.5.2 Northern Goshawk (BLM Sensitive)

Limited surveys thus far have not found northern goshawks in the Planning Area. If a northern goshawk (*Accipiter gentilis*) nest is located, it would be protected with a 30-acre nest core area and no activity would be permitted within 1/4 mile of the nest between March 1-July 15, or until a biologist has determined that nesting is not occurring or that the juveniles have sufficiently dispersed.

2.2.5.3 Raptors

All special status raptor nests would be protected from project activities that are within ¼ mile that might disturb or interfere with nesting between March 1 and July 15.

2.2.5.4 Townsend big-eared bat (Special Status: BLM Sensitive)

Provide 250’ buffer for timber harvest around known adits and a 100’ buffer for fuels treatment except in September, when the full 250’ buffer would remain for all activities to protect swarming bats.

2.2.6 Special Status Plant Species and Habitat

Bureau Sensitive and Assessment species will be protected by buffers, which will vary in circumference depending on unit prescription Sensitive and Assessment sites residing in units retaining more than 40% canopy closure will receive a 100’ buffer, while sites within units retaining less than 40% canopy closure will receive a 200’ buffer. Sites within units slated for fuels treatments will be protected, but buffer sizes will vary, depending on 1) the prescribed fuels treatment and 2) the time of year treatment will occur.

2.2.7 Snags and Down Logs

All regeneration or overstory removal harvest units would be guided by the “Guidelines for Snag and Down Wood Prescriptions in Southwestern Oregon” (White). The ROD provided for specific coarse woody measures to be developed (C-40). Where existing sites are currently below standard levels, all non-hazardous snags would be retained in all

harvest units. If it is necessary to fall snags for safety reasons, they would remain on site as down wood. All naturally occurring dead and down woody debris, greater than or equal to 16 inches diameter breast height (DBH) would remain on the site.

2.2.8 Fish/Streams/Riparian Habitat

In accordance with the Medford District RMP and the Northwest Forest Plan (NFP), riparian reserve widths would be 150 feet (one site potential tree) on each side of non-fishery intermittent and perennial streams. On fish streams, the width would be a minimum of 300 feet (two site potential trees). Riparian reserve width on springs and seeps would be 100 feet.

Clearing limits for an existing log landing, which is in a riparian reserve, for unit 27-2, would not be expanded toward the stream. There would be no felling of commercial size trees in order to use this landing.

No new log landings would be constructed in riparian reserves.

Trees within one tree length of riparian reserves would be directionally felled away from the edge so tree felling would not impact these reserves.

Trees in riparian reserves, owl core areas, and on timber production capability classification (TPCC) withdrawn land, that are accidentally knocked over during falling and yarding would be retained on-site for fish and wildlife habitat.

2.2.9 Timber Harvesting

Partial suspension would be required on all cable units to minimize soil displacement and compaction.

The number of yarding corridors would be minimized to reduce soil compaction from cable yarding. Landings and corridors would be located approximately 150 feet apart; lateral yarding would be required in all units.

Landings would be located in approved sites, designed with adequate drainage. Step landings would be re-contoured following use. Helicopter landings would be constructed and used in the same season. The constructed landings would be sub-soiled (Davis 1990) following logging and planted with conifers. Exceptions would be where landings utilize existing road prisms, in which case the original roads would not be sub-soiled. Dust abatement on landings would include rocking, lignin, or watering. Adequate drainage would be provided to minimize erosion. The helicopter landings would only be rocked if it is necessary to prevent erosion and stream sedimentation.

Helicopter landings located on private lands would comply with road use agreements and all applicable state and federal environmental laws, regulations and standards.

Helicopter refueling sites would be operated to comply with all applicable regulations.

Tractor yarding would only be allowed during the dry season (generally between May 15 and October 15 of the same year) to minimize the amount of soil disturbance and compaction. If the Field Manager determines that soils are too wet, within or outside this time period, tractor yarding would not be allowed. Water bar spacing on tractor skid trails would be based on existing guidelines considering slope and soil series.

Unit layout would restrict tractor yarding to slopes less than 35% in order to prevent excessive soil disturbance. In order to minimize soil disturbance, tractor blades would not be used to excavate tractor trails.

Yarding tractors would not exceed nine feet in width and would be equipped with an integral arch to minimize soils disturbance and compaction.

Tractor yarding would use existing skid roads if present. Where skid roads are not present, pre-designated skid roads would be approved by the Authorized Officer.

Skid roads used in this timber sale would be discontinuously sub-soiled with winged rippers or scarified (thinning units) and water-barred to reduce erosion. This work would be allowed between May 15 and October 15. Water bars would be installed at the same time as subsoiling. Native grass/forb seeding, mulching or hay bale placement would be done where needed to minimize surface erosion.

2.2.10 Transportation

New road construction (permanent and temporary), road decommissioning, road maintenance, and log hauling would be restricted to the dry season (generally between May 15 and October 15 of the same calendar year).

During road decommissioning, any draw culverts would be removed, slopes pulled back to at least 2:1 and the road surface would be subsoiled and waterbarred. All bare soil would be stabilized by mulching or seeding with native vegetation.

Temporary roads would be built, used, ripped with a winged subsoiler, waterbarred, mulched and seeded.

Helicopter landings would be winterized with water bars, berms, dikes, dams, sediment basins, gravel, or mulched as needed. The term “winterize” means to minimize the amount of erosion which takes place before the disturbed soil and new surfaces are stabilized.

Log hauling would be permitted primarily between May 15 and October 15 of the same calendar year on all roads. Road conditions will be monitored during log haul. Log hauling would be suspended during wet weather if it causes turbidity in streams at road

crossings. The Field Manager may approve a provisional off-season log hauling agreement, if dry weather conditions exist during the restricted hauling season. The purchaser would be required to request the off-season log haul from the Field Manager in writing.

Hauling would not occur across Grave Creek Country Bridge due to weight restrictions.

Blading ditchlines and the road prism, as well as cleaning culvert inlets, would be done only where absolutely necessary in order to maintain proper road drainage while minimizing potential for soil to reach streams.

Water drafting sites would be approved by the Authorized Officer and would be designed and used in ways to minimize adverse effects on stream and riparian habitat. Screening on intake pipes would meet NOAA Fisheries criteria to protect listed fish species.

Rocked water dips would be built immediately after hauling has been completed (before the wet season) on the ¼ mile long privately owned (Perpetua) natural surface road in section 35 that accesses a helicopter landing.

Energy dissipators and down spouts would be installed at cross-drain and stream culverts where necessary to protect road fill slopes that are not adequately protected by natural materials.

Culvert replacement work in any stream would be restricted between June 15 through September 15 in accordance with Oregon Department of Fish and Wildlife (ODFW) instream work period guidelines.

Geotextile fabric or coconut fiber logs/bales would be placed immediately downstream of the work area to reduce movement of sediment downstream from culvert replacement sites.

All new culverts and replacements would be of adequate size to pass a 100 year peak flow.

Hydraulic fluid and fuel lines on heavy mechanized equipment would be in proper working condition in order to minimize potential for leakage into streams.

Equipment refueling would be done within a confined area outside the stream channel such that there is minimal chance that toxic materials could enter a stream.

Flowing water would be diverted around each culvert replacement site whenever there is sufficient water volume and would be returned to the channel immediately downstream.

Surface area of erodible earth exposed at any one time by grubbing and excavation would not exceed two acres after September 15 to avoid excessive erosion during fall rains.

Road cuts, fill slopes, borrow material and other bare ground disturbed by road construction activities would be mulched and seeded prior to autumn rains.

2.2.11 Visual Quality

For unit 27-1 spur road, minimize road width, leave some vegetative cover on the cut banks, and leave a dense canopy of trees along the south-facing, downhill side of the road.

For proposed landing on 34-6-2 road, leave some vegetation on the west side of the landing closest to the road as a vegetative screen where feasible.

For landing at junction of 34-6-2 and 34-6-1.2 road, leave a strip of vegetative screen on the west and south facing sides of the landing.

For unit 35-8 landing, locate landing on the west or northwest side of the mountain if possible. If landing must be located on the south, southeast, east, or northeast of the mountain leave a vegetative screen between the landing and the view from Interstate 5.

For landing on road 33-6-27.2, leave a vegetative screen between the landing and the view from Interstate 5.

For unit 13S-1, 13S-2, 13S-3A landings on the north or northeast side of the mountain, leave a vegetative screen between the landing and the view from the rural residents located below.

2.2.12 Rural Interface Area

Residents within 1/4 mile of helicopter units would be notified before helicopter activity begins. Provide vegetative screen between harvesting and rural residents. For unit 35-2, trees to be thinned would be feathered 100’ from the unit boundary. Feathering would be progressively thinned from the unit boundary from full retention to 40% tree canopy retention.

Dust abatement using water, lignin or other approved methods would be implemented on haul roads located near residences in Salmon Creek., Burgess Gulch, Miller Gulch, Flume Gulch, Copper Queen, Tunnel Ridge and Mackin Gulch. Lignin would not be applied when the road is wet, when it’s raining or when rain is expected to avoid direct delivery to any water body. Lignin would not be applied within 25 feet of any water body or stream channel.

Locate and sign rural school bus stops if proposed activities occur during typical “in-school” months.

Use roadside traffic signage in residential areas warning residents of increased truck traffic or road closure. Road 33-6-26 would be closed for approximately one week to harvest unit 27-1B

2.3 Alternatives. This section describes each alternative.

2.3.1 Alternative 1 (No Action)

The No Action Alternative provides a baseline for the comparison of the alternatives and describes the existing condition and the continuing trends. Selection of this alternative would not meet the purpose and need of the project (described in Chapter 1) of harvesting timber and implementing the Medford RMP at this time. Harvest would, however, occur at another location under separate NEPA analysis in order to meet harvest commitments identified in the RMP (pp. 3, 17). Selection of this alternative would not constitute a decision to reallocate these lands to non-commodity uses. Future harvesting in this area would not be precluded and could be analyzed under a subsequent EA. Road maintenance would be dependant on funding and reciprocal road use agreements.

2.3.2 Alternative 2 (Proposed Action)

Alternative 2 would meet the purpose and need objectives stated in Chapter 1 of producing a sustainable supply of timber and other forest commodities to provide jobs and contribute to community stability (RMP, p. 38). Alternative 2 emphasizes timber harvesting as described under matrix land objectives in the Medford Resource Management Plan. Locations of the units are shown on the attached map (Appendix 5).

Description of Prescribed Treatments

See Silvicultural Prescriptions for specific harvest unit descriptions (Appendix 4). The intent in regeneration harvest (RH) units is to regenerate a new stand of conifers while retaining a component of snags, down wood, hardwoods, and overstory legacy trees. In general, RH prescriptions would harvest timber, leaving at least 7-10 large conifers per acre. These conifer trees would be selected proportional to the existing species composition and equally across all 20"+ diameter classes present. The RMP specifies retaining 6-8 green conifer trees per acre (RMP, p. 39). One to two trees per acre would be retained to ensure meeting coarse woody debris guidelines (USDA/USDI. 1994b, p. C-40). The actual number of trees retained would vary between units in order to provide additional coarse woody debris, where lacking, and additional shade on harsher sites The RH units would be burned, if necessary, to prepare the site and then planted. For stands within connectivity/diversity blocks, retain 12-18 green conifer trees per acre.

In group selection (GS) units, small patch cuts would create openings of approximately one acre in size affecting approximately 7-10% of the total stand during this entry. The GS openings would be hand-piled and burned to reduce fuels and prepare the site for planting.

In commercial thin (CT) units, merchantable trees from an even-aged stand would be removed to encourage the growth of the residual trees. Stands are generally composed of younger commercial sized trees. While some stands within the Planning Area exhibit even-aged characteristics, most of the stands are comprised of mixed ages that reflect previous harvesting and/or historic fire intervals.

In the units proposed for selection cut (SC), individual trees would be removed from the stand to provide increased growing space for residual trees and established regeneration and encourage natural regeneration of conifers. The objective of the selection cut is to modify the existing stand structure. This is intended to capture wood volume of suppressed conifers, overstocked portions of the stand to redistribute growth potential to the residual trees and in some instances, release conifer reproduction. Trees in all diameter classes are considered for retention. Some discrimination among the immature trees must occur, such that the least healthy are harvested during the cutting cycle operations and the most vigorous are retained. Priority for larger conifer retention is the largest and most vigorous, while meeting the objectives above.

Small diameter commercial thinning would thin the stand from below to reduce stocking and to harvest small diameter trees (smallwood) less than 8” DBH.

For all prescribed fire activities, a prescribed fire plan would be prepared that includes both resource and fire objectives. Fuel moisture and weather parameters would be developed based on these objectives. The timing of the burn would be based on achieving these objectives, occurrence of the parameters, predicted weather, and the availability of adequate fire suppression resources as a contingency plan in the event of fire escape. Prescribed fire effects can include mortality in both the overstory and understory vegetation.

Future underburns may also be implemented to help maintain the stand in its natural condition and prevent a future build-up of fuels. These underburns would be light treatments and help maintain the reduced fire hazard following the initial slashing and pile burning treatment. Typically, maintenance underburns would occur 2-7 years following the initial treatments but would be driven by the condition of the stand and regrowth of slashed vegetation. Underburning is the application of prescribed fire within areas where residual trees and shrubs are present. The prescribed fire objective is to reduce the fuel hazard from both dead and down woody material and to reduce the amount of “ladder” fuels present. Ladder fuels consist of live or standing dead vegetation such as shrubs and small trees in the understory and live and dead branches close to the ground level on overstory trees.

Harvest treatments (Alternative 2)

Regeneration harvesting (RH) would occur (see table 2-4) on approximately 115 acres of matrix lands within 8 units. The number of trees to be retained in would be 7-10 large conifers. Regeneration harvest treatments within connectivity/diversity blocks (15S-4, 15S-6, & 15S-7) would retain at least 12-18 trees per acre (tpa) and maintain 25-30

percent in late-successional forest condition (RMP p. 40). Group Selection (GS) would occur within unit 10-1 and create one to two small openings, approximately ½ to 1 acre in size. Commercial thinning (see table 2-5) would harvest approximately 469 acres within 32 harvest treatment units. The existing stands would be thinned to release the residual trees and retain at least 40 % of the canopy; however, units 5S-1, 5S-2A, 5S-2B, 5S-3, 32-2 and 32-3 would maintain at least 60% canopy. Approximately 49 acres would be yarded with tractor, 390 acres by cable and 225 acres by helicopter. Selection cutting would occur on 80 acres within 4 harvest units.

All units, except commercial thinning, would be evaluated for reforestation needs. Burning would be done to prepare the site for planting, control competing vegetation, and reduce fire hazard. Planting would be done as necessary to meet desired stocking levels. Additional treatments, such as shade-carding, mulching, browse protection for seedlings and controlling competing vegetation could be implemented to ensure adequate establishment of the next forest stand.

Transportation (Alternative 2)

It is estimated that 46 miles of existing roads would be maintained, 1.10 miles of temporary roads would be built and then decommissioned, 200 feet of permanent road would be built and then blocked, 0.10 miles of existing roads would be decommissioned and 0.80 mile would be gated. Maintenance includes surface blading, ditch work, roadside brushing, drainage improvement, spot rocking, culvert cleaning and culvert replacement. The description of treatments for individual road segments is displayed in Table 2-2 below.

Table 2- 2. Summary of road construction, maintenance, decommissioning and blocking (gating and trench barricade) for Alternative 2.

Road Number	Road Name	Length	Surface	Proposed	Haul
33-5-31	Miller Gulch	0.11	NAT	Maintenance	5/15-10/15
33-5-31.2 A/B	Miller Mobile	0.96	ASC	Maintenance	5/15-10/15
33-5-31.3 A/B	Miller Benjamin	2.40	ASC	Maintenance	5/15-10/15
33-5-31.7	Miller Gu. S Sp	0.13	ASC	Maintenance	5/15-10/15
33-5-32 A	Miller Gulch X	0.40	ASC	Maintenance	5/15-10/15
33-5-32.1	Valley View	0.65	ASC	Maintenance	5/15-10/15
33-6-10 A-F	Farmers Gulch	1.43	NAT	Maintenance	5/15-10/15
33-6-10.1 A1	Rollercoaster	0.40	NAT	Maintenance	5/15-10/15
33-6-10.2 A/B	Tunnel Ridge	0.82	NAT	Maintenance	5/15-10/15
33-6-24	Miller Gulch	4.03	ASC	Maintenance	5/15-10/15
33-6-26	Wolf Cr. Divide	2.70	GRR	Maintenance	5/15-10/15
33-6-27	London Peak	0.80	GRR	Maintenance	5/15-10/15

Road Number	Road Name	Length	Surface	Proposed	Haul
33-6-27.2	White Fang	1.35	GRR	Maintenance/ Drainage	5/15-10/15
33-6-27.3	Jack's Spur	0.41	GRR	Maintenance	5/15-10/15
33-6-27.4	Barleycorn	0.10	GRR	Maintenance/ Decommission after use	5/15-10/15
33-6-27.5	Rd with no name	0.20	NAT	Maintenance	5/15-10/15
33-6-33	Flume Gu Sp	1.00	GRR	Maintenance	5/15-10/15
33-6-33.2A	Flume Gu Sp 2	0.33	PRR	Maintenance	5/15-10/15
33-6-33.4	Flume Descent	0.25	GRR	Maintenance	5/15-10/15
33-6-33.5	Flume Descent E	0.25	GRR	Maintenance	5/15-10/15
33-6-33.6	Flume Descent D	0.40	GRR	Maintenance	5/15-10/15
34-5-6	Miller Gu. N	0.14	ASC	Maintenance	5/15-10/15
34-6-1	Salmon Cr Sp	0.47	GRR	Maintenance	5/15-10/15
34-6-1.1	Aiko-Aiko rd	1.50	GRR	Maintenance	5/15-10/15
34-6-2 A-D	Salmon Cr	2.95	PRR	Maintenance	5/15-10/15
34-6-3.1 A	Mackin Gulch	0.50	ASC/PRR	Maintenance	5/15-10/15
34-6-3.3 A	Mackin Ridge	1.56	ASC	Maintenance/ Drainage	5/15-10/15
34-6-3.3 B	Mackin Ridge	0.40	NAT	Maintenance	5/15-10/15
34-6-5 A-B	Flume Gulch	4.70	GRR	Maintenance	5/15-10/15
34-6-5 C	Flume Gulch	0.80	NAT	Maintenance / Drainage	5/15-10/15
34-6-9 temp spur 1 access unit 9-1	None	0.30	NAT	Construct/Decommission after use	5/15-10/15
34-6-11.1 A-B	Copper Queen	2.60	ABC	Maintenance	5/15-10/15
34-6-12 A	Burgess Gulch	0.62	ASC	Maintenance	5/15-10/15
34-6-12 B-D	Burgess Gulch	2.90	ASC	Maintenance	5/15-10/15
34-6-13	Sexton	1.49	ASC	Maintenance	5/15-10/15
34-6-13.1A	Shorthorn Sp	0.41	ASC	Maintenance	5/15-10/15
34-6-13.1B	Shorthorn Sp	1.00	NAT	Maintenance/ Reblock	5/15-10/15
34-6-13.2	Burgess Sp	0.78	NAT	Maintenance/ Reblock	5/15-10/15
34-6-13.3	Burgess Sp	0.25	NAT	Maintenance/ Reblock	5/15-10/15
34-6-15	Copper Queen S	0.62	NAT	Maintenance	5/15-10/15
34-6-15.1	Copper Queen F	1.00	NAT	Maintenance	5/15-10/15
Private Spur rd 1 34-6-Sec.10	34-6-10 A (Coulter Mainline)	0.80	NAT	Maintenance/gate after use	5/15-10/15
34-6-10B	Coulter Mainline	.04	NAT	New Road Construction. Block after use	5/15-10/15

Road Number	Road Name	Length	Surface	Proposed	Haul
Private Spur rd 2 34-6-Sec.10	Now 34-6-10.1 (Coulter Spur)	0.20	NAT	Maintenance	5/15-10/15
33-6-27 Spur 1 seg. A	Existing road	0.20	NAT	Maintenance/ Decommission after use	5/15-10/15
33-6-27 temp spur 1 seg. B access unit # 27-1B unit	None	0.20	NAT	Construct/Decommission after use	5/15-10/15
33-6-33 spur road 1	None	0.10	NAT	Maintenance	5/15-10/15
33-6-35 Pvt. spur	Heli-landing	0.10	NAT	Maintenance	5/15-10/15
33-6-35 Pvt. road	Perpetua Perm rd	?	NAT	Maintenance	5/15-10/15
34-6-3.3 Pvt. spur	Perpetua	0.30	NAT	Maintenance	5/15-10/15
34-5-5 Temp spur 1 access unit # 5S-2B	33-5-32.1 extension	0.10	NAT	Construct/ Decommission after use	5/15-10/15
34-5-6 extension access unit # 5S-1	34-5-6 extension	0.30	NAT	Construct/Decommission after use	5/15-10/15
33-5-31.3 spur 1 temp. access unit # 5S-3	33-5-31.3	0.1	NAT	Construct/Decommission after use	5/15-10/15
33-5-31.3 spur 2 temp. spur access unit # 5S-3	33-5-31.3	0.1	NAT	Construct/Decommission after use	5/15-10/15

Definitions:
BST Bituminous Surface Treatment
ABC Aggregate Base Course
ASC Aggregate Surface Course
GRR Grid Rolled Rock
PRR Pit Run Rock
NAT Native Surface

Table 2.3 Temporary Road Construction (Proposed Action)

Access to Unit	Road type	Length, mile	Surface Type
9.1	34-6-9	0.3	NAT
27-1B	33-6-27	0.2	NAT
5S-2A	34-5-5	0.1	NAT
5S-1	34-5-6	0.3	NAT
5S-3	33-5-21-3 a	0.1	NAT
5S-3	33-5-21-3 b	0.1	NAT
Total miles		**1.10**	

Definitions:
NAT Native Surface

Post-Harvest Fuels Management/Site Preparation (Alternative 2)

Activity slash created from timber harvesting would be slashed, handpiled and burned on approximately 664 acres. The proposed slashing, hand piling and burning of created slash from timber harvest treatment units would be designed to remove approximately 50 to 75% of the fuel between 1 and 6 inches in diameter and greater than 2 feet in length. Hand piling and slashing of activity slash would be up to 7" diameter on the large end and not to exceed three feet in length. Fuel outside this size range would be left untreated. However, some smaller fuels would be included in the piles to create optimal ignition conditions.

Slashing of undamaged brush, hardwoods and conifers could be requested to meet hazardous fuels reduction and site preparation requirements. Typically, maintenance underburns would occur 2-7 years following the initial treatments but would be driven by the condition of the stand and regrowth of slashed vegetation. It is estimated that approximately 50% of the post harvest fuels units would be followed up by future maintenance under burns.

2.3.3 Alternative 3 (Hydrology, Wildlife Emphasis)

Alternative 3 would meet the purpose and need objectives stated in Chapter 1 of producing a sustainable supply of timber and other forest commodities to provide jobs and contribute to community stability (RMP, p. 38). This alternative also responds to the concern with potential increased water flow from the transient snow zone from regeneration harvesting and affects to late-successional wildlife habitat. The main features that separate Alternative 3 from Alternative 2 are that there would be several units deferred from treatment (Table 2-4).

Harvest Treatments (Alternative 3)

Alternative 3 would harvest 36 units covering approximately 501 acres. A summary of the proposed harvest units and treatments is presented in Table 2-5. Locations of the units are shown on the attached map (Appendix 5).

Regeneration harvesting (see table 2-5) would include approximately 51 acres within 4 units. The target number of trees to be retained in matrix lands would be 7-10 large conifers and 3 large hardwoods per acre, as well as snags and down logs to provide biological legacies and large structure. The actual number of trees retained would vary between units in order to provide additional coarse woody debris, where lacking, and additional shade on harsher sites. Units 5S-3, 29-1, 32.2 and 32-3 and 21 acres of 5S-1 would be deferred for transient snow zone concerns and units 6S-5, 15S-4, 15S-6, & 15S-7 would be deferred for late-successional wildlife habitat concerns.

In commercial thin (see table 2-5) units, the existing stands would be thinned to release

the residual trees removing approximately 30% of the canopy.

Transportation (Alternative 3)

It is estimated that 46 miles of existing roads would be maintained, 0.9 miles of temporary roads would be built and then decommissioned, 200 feet of permanent road would be built and then blocked, 0.10 miles of existing roads would be decommissioned and 0.80 mile would be gated. The treatments for individual road segments are similar to Alternative 2 and displayed in Table 2-2 above.

Post-Harvest Fuels Management/Site Preparation (Alternative 3)

Compared to Alternative 2, units 5S-3, 6S-5, 15S-4, 15S-6, 15S-7, 29-1, 32-2, 32-3 and 21 acres of 5S-1 would be deferred. Approximately 501 acres would be treated by slashing, hand piling, pile burning and future underburning.

2.4 Comparison of Alternatives

Table 2-4 summarizes individual unit harvest treatments for each of the two action alternatives. Table 2-5 summarizes silvicultural and post-harvest fuels management prescriptions, transportation management needs and logging systems for each action alternative. Appendix 5 provides a geographic display of the harvest prescriptions under Alternative 2.

Table 2 - 4. Action Alternatives Harvest Treatments

Unit	ACRES	Alternatives 2		Alternative 3	
		RX	YARDING	RX	YARDING
1S-4A	10	SC	cable	SC	Cable
1S-4B	11	SC	cable	SC	Cable
1S-7	10	SC	Heli/Tractor	SC	Heli
5S-1	43	CT (60%)	cable	CT (60%)	cable
5S-2A	6	CT (60%)	cable	CT (60%)	cable
5S-2B	8	CT (60%)	cable	CT (60%)	cable
5S-3	18	CT (60%)	cable	defer	
6S-5	11	REGEN	heli	defer	
9-1	22	REGEN	cable	REGEN	cable
9-2	3	REGEN	cable	REGEN	cable
10-1	1	GS	heli	GS	Heli
13S-1	42	CT	heli	CT	heli
13S-2	21	CT	cable	CT	cable
13S-3A	8	CT	cable	CT	Heli/cable
13S-3B	1	CT	cable	CT	Heli/cable
13S-3C	7	CT	cable	CT	Heli/cable
15S-2A	9	CT	cable	CT	cable
15S-2B	2	CT	cable	CT	cable
15S-2C	2	CT	tractor	CT	cable
15S-2D	3	CT	tractor	CT	cable
15S-2E	10	CT	cable	CT	cable
15S-2F	2	CT	cable	CT	cable

Unit	ACRES	Alternatives 2		Alternative 3	
		RX	YARDING	RX	YARDING
15S-4	25	REGEN	Heli/cable	defer	
15S-6	16	REGEN	cable	defer	
15S-7	12	REGEN	cable	defer	
15-3	47	CT	heli	CT	heli
27-1A	28	CT	Heli/cable/5 tractor	CT	cable
27-1B	26	CT	cable/tractor	CT	cable
27-1C	15	CT	Heli/cable/ tractor	CT	heli/cable/tractor
27-2	32	CT	Heli	CT	Heli
27-3	2	CT	Heli/cable	CT	Heli/cable
27-4	10	CT	Heli	CT	Heli
29-1	49	SC	Cable/ tractor	defer	
32-1	25	REGEN	Heli/cable	REGEN	Heli/cable
32-2	9	CT (60%)	cable	defer	
32-3	2	CT (60%)	cable	defer	
33-5	68	CT	Cable/tractor	CT	cable
35-2A	11	CT	Heli	CT	Heli
35-2B	9	CT	Heli	CT	Heli
35-3	1	CT	Heli	CT	Heli
35-5	6	CT	Heli	CT	Heli
35-6	4	CT	Heli	CT	Heli
35-7	4	CT	Heli	CT	Heli
35-8	13	CT	cable	CT	Heli/cable
Totals		664		501	

Table 2- 5. Summary of Specific Harvest Features by Alternative

Specific Features	**Alternatives**	
	2	**3**
Timber Harvest Levels		
Units Treated	44	36
Acres Treated	664	501
Regeneration Harvest/ Group Select		
Units Treated	8	4
Acres Treated	115	51
Range in Unit Size (Acres)	1-25	1-25
Commercial Thinning:		
Units Treated	32	29
Acres Treated (40% canopy)	383	383
Acres Treated (60% canopy)	86	36
Range in Unit Size (Acres)	1-68	1-68
Selective Harvest		
Units Treated	4	3
Acres Treated	80	31
Range in Unit Size (Acres)	10-49	10-11
Post-harvest Fuels Treatments		

Specific Features	Alternatives	
	2	3
Units Treated	44	36
Acres Treated	664	501
Road Work:		
Perm(Miles)	0.04	0.04
Temp. Minimum Roads (Mi.)	1.10	0.90
Maintenance (Miles)	46	46
Decommission	0.10	0.10
Block perm. Rd.	0.04	0.04
Gates	0.80	0.80
Harvest Methods (Acres)		
Cable	390	260
Helicopter	225	202
Tractor	49	39

Chapter 3.0 Affected Environment and Environmental Consequences

3.1 Introduction

In accordance with law, regulation, executive order, policy and direction, an interdisciplinary team reviewed the elements of the human environment to determine if they would be affected by the alternatives described in Chapter 2.0. Those elements of the human environment that were determined to be affected define the scope of environmental concern (**see Environmental Elements in Appendix 2 for full list of elements considered**). The Affected Environment portion of this chapter describes the current conditions and how they came to be. The relevant resources that could be potentially impacted are: effects to fire risk, recreation, special status wildlife species; fish, streams, riparian habitat and soils as the result of management activity.

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

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

3.2 Fire Risk

3.2.1 Affected Environment

The Grave Creek Watershed Analysis (WA) describes historic fires and sources of ignition (p. 70-72) and defines High Hazard Areas, High Risk Areas, and High Value Areas (p. 45-47). Map #12 in the WA shows the High Hazard Areas that exist within the watershed. Map #13 incorporates all three criteria to develop "High Priority Fuels Management" areas.

The Planning Area is within the Klamath Province Region in Southwestern Oregon. Fire is recognized as a key natural disturbance process throughout Southwestern Oregon (Atzet and Wheeler 1982). Fire has played an important role in influencing successional processes and

creating diverse forest conditions.

Prior to the 20th century, low severity fires burned regularly in most dry forest ecosystems, with ignitions caused by both lightning and humans. Low severity fire controlled regeneration of fire-intolerant (plants unable to physiologically withstand heat produced by fires) species, promoted fire tolerant species (for example ponderosa pine and Douglas fir), maintained an open forest structure, reduced forest biomass, decreased the impacts of insects and diseases, and maintained wildlife habitats for many species that utilize open stand structures (Graham R.T. et.al, 2004). Native Americans influenced vegetation patterns for over a thousand years by igniting fires to enhance values that were important to their culture (Pullen, 1995). Early settlers to this area used fire to improve grazing and farming and to expose rock and soil for mining. Large, low to moderate severity fires were a common occurrence in the area based on fire scars and vegetative patterns.

Fire suppression efforts began in the early 1900s but effective suppression in the area did not occur until after World War II. With the advent of roads into the area, combined with adequate personnel, suppression efforts became more effective. As a result of the absence of fire, there has been a buildup of unnatural fuel loading and a change to fire prone vegetative conditions. Species, such as ponderosa pine and oaks, have decreased. Stands which were once open are now overstocked with conifers and small hardwoods and brush which have changed the horizontal and vertical stand structure.

In the Douglas-fir series there has been an increase in stand densities with a shift to more shade tolerant species (Atzet, 1996). High stand densities result in trees becoming weakened and are highly susceptible to insects, epidemics and tree pathogens. Higher stand density tend to burn at higher intensity and higher severity.

Fire risk reflects the probability of ignition within a given area. Increasing development of homes in the wildland urban interface, trail systems, dispersed camp sites, recreational use, and major travel corridors all serve to increase the risk of a fire occurring from human causes. Fires most frequently occur between July through September when conditions tend to be the driest and most flammable.

Information from the Oregon Department of Forestry database from 1962 to 2004 and the Bureau of Land Management, Medford District GIS fire layer from 1947 to 1987 show a total of 381 fires occurred throughout the Grave Creek Watershed. Lightning accounted for 34 percent of the total fires and human caused fires accounted for 65 percent. Unknown causes accounted for less than 1 percent of the fires. Table 3-1 displays fire occurrences by size class within the Grave Creek Watershed area for all ownerships:

Table 3 - 1. Wildfires within the Grave Creek Watershed

Total Number of Fires	Size Class	Size
279	A	< .25 ac
82	B	.26 - 10 ac
13	C	10.1 - 99 ac
3	D	100 - 299 ac
1	E	300 – 999 ac
3	F	1000 - 4999 ac
0	G	> 5000 ac

3.2.2 Environmental Effects

Alternative 1 (No Action)

The current trend of increasing stand density would remain unchanged. This would continue the trend for shade tolerant species to promote an increase in ladder fuels, surface fuels, and aerial fuels (crown density) within these stands. As mortality continues in these stands, the potential for a large fire to occur increases as the vegetation increases in density and becomes more continuous and homogeneous.

Action Alternatives (Alternatives 2 & 3)

The action alternatives would reduce the aerial fuels, ladder fuels, surface fuels, and thereby reduce the potential risk of catastrophic fire within the units proposed for harvest.

In the short term (1-2 years), logging slash would create higher fuel loadings on the ground. Fuel amounts are measured in tons per acre for different size material. Material up to 3 inches in diameter has the greatest influence on the rate of spread and flame length of a fire and, therefore, fire suppression efforts. Prior to fuels treatments, created fuel loadings from commercial thinning and selective cut units would be increased by approximately 3-15 tons per acre. These conditions would allow a higher rate of spread and greater flame lengths. Prior to fuels treatments on regeneration harvest units and group selection, created fuel loadings would increase 20-35 tons per acre. Until the logging slash is treated (typically 6 months to a year after the harvest) there would also be an increase in the duration and intensity of a ground fire should it occur). This is also the time period to implement the fuel treatments to dispose of the surface and ladder fuels in these stands. Surface fuels would be treated on most of the harvested units.

The 115 acres of regeneration harvest in Alternative 2 and 51 acres in Alternative 3 would, in the short-term (7-10 years), be more fire resilient, but after the stand is re-established with small trees it would have an increased fire risk (increase in flammability) until the stand develops into an older age class (stands approximately greater than 80 years of age). Maintenance under burns would occur on approximately 50 percent of the harvested units after initial treatments of created slash.

Cumulative effects

From 1974 through 2002, approximately 18,572 acres (18 percent) of the entire Grave Creek watershed (104,371 acres) experienced detectable reduction in vegetative cover based on Medford District geographical information system (GIS) layer, Vegetation Change Detection. This reduction in vegetative cover could be attributed to wildfire, management practices (i.e., logging, road construction), urban growth, or natural disturbances such as windthrow. The post-harvest treatment of logging slash and maintenance underburns on 664 acres in the Proposed Action would effect approximately 0.64 % of the watershed. The cumulative effect is considered minimal when added to 18% vegetation cover reduction during the period from 1974 to 2002.

3.3 Recreation

3.3.1 Affected Environment

The 2 ½ mile long London Peak Trail and its section of Barrier Free Trail are located just outside the rural community of Wolf Creek, on London Peak. The trail can be entered via the trailhead located at the Wolf Creek County Park, or at the trailhead located off of road number 33-6-26 located at the top of London Peak. This trail system is considered "precious" by many local residents due to the historic use of the trail by famous author Jack London, whom the mountain and trail is named after. The trail system receives visitors from throughout the northwest as well as locally.

Approximately 1,500 visitors come to London Peak per year to enjoy hiking on the trail. The majority of these hikers enter the trail via the Wolf Creek County Park. The remaining hikers enter the trail system from the top of London Peak via the 33-6-26 road.

Additionally, in Sunny Valley dispersed recreation occurs in the Salmon Creek drainage along the 34-6-2 and 34-6-1 roads. This dispersed recreation includes hiking, bicycling, off highway vehicle use, and horseback riding. This recreation usage accounts for an estimated 900 visitor occurrences annually.

3.3.2 Environmental Effects

Alternative 1 (No Action)

There are no anticipated road closures or traffic delays from harvest activities proposed under the action alternatives. However, logging of private, state, county or other public lands would continue because of the checkerboard mixed ownership lands.

Action Alternatives (Alternatives 2 & 3)

Due to logging operations for unit 27-1B, the 33-6-26 access road to London Peak would be completely closed to through traffic for approximately one week. During this period, it is estimated that less than 50 visitors to the upper segment of the London Peak Trail will be affected. Due to logging operations and a helicopter landing for units 1S7 & 1S4, through traffic

on the 34-6-2 and 34-6-1 roads could experience up to 30 minute delays during harvest operations. It is estimated that less than 40 visitors to this area will be affected during harvesting operations. Project Design Features located Section 2.2.12 address notification of the road closure.

Cumulative Effects

The effects are considered short term, no more than a week and there are no anticipated cumulative effects to the existing recreation environment from the action alternatives.

3.4 Threatened, Endangered, & Special Status Wildlife and Habitat

3.4.2 Northern Spotted Owl (Threatened)

3.4.2.1 Affected Environment

One of the functions of matrix lands is to serve as connectivity between late-successional reserves (p.B-43, USDA/USDI 1994b). Owl sites found after January 1994 receive no mandatory protection, except for the nest site and seasonal restrictions (USDA/USDI 2003, p.72). The reduction of suitable habitat and degradation to owl sites on matrix lands is within analysis criteria of the NFP and the FY04-08 Biological Assessment. A shift to increasing numbers of owl sites in maturing large reserves is expected to contribute to the recovery goals and conservation needs of spotted owls, through providing multiple clusters of breeding spotted owls (USDA/USDI 2003, p. 103). Demographic data from northern spotted owls in the Klamath Demographic Study Area collected from 1985-2003 indicate that populations appear to be stable in the Klamath study area as a result of high survival and number of young produced over the period of the study.

There are eight northern spotted owl Activity Centers in the Planning Area, including three official activity centers, Colby (A.C.#2618), Tunnel Ridge (A.C.#3279) and Wolf Creek (A.C.#2624), which were identified prior to the signing of the Northwest Forest Plan (NFP), and have 100-acres identified to be managed for late-successional characteristics. An activity center is considered viable if there is at least 40 percent of the area within the 1.3 mile home range in a suitable habitat condition. Suitable habitat generally consists of stands with trees greater than 21”dbh with 60 percent or greater canopy closure. None of the official activity centers are in viable condition, further indicating a relatively sparse late-successional condition in the Planning Area. (Pose, 2005)

Extensive harvesting on BLM lands occurred in the Planning Area prior to the 1990 listing of the spotted owl, and the implementation of the NFP in 1994. Harvesting on private lands continues to be extensive. Other activities, such as quarry development, road building, rock slides, herbicide application (private lands), and fire have additionally contributed to the loss of spotted owl suitable habitat.

Table 3-3. Northern Spotted Owl Visit Effort and Status Determination for 2000-2004.

Owl Site	2000	2001	2002	2003	2004
Colby (100 acre core)	Pair Not breeding	Pair Nested 2 Juveniles	Single Male Breeding unconfirmed	No Response	No Response
Dead Shank	Pair-Nesting Unconfirmed	Not checked	1 visit – no response	Not checked	Single Male
Dog Tunnel East	Not checked	Not checked	Not checked	Not checked	Not checked
Flume			Located 2002 Single male	Pair Nested 1 juvenile	Pair Nested 2 juveniles
Free Fall	Pair 1 Juvenile	No response	Not breeding	No response	Pair-Nesting Unconfirmed
Malone Peak	Not checked	Single male	Not breeding	Not breeding	No response
Tunnel Ridge (100 acre core)	Not checked	No response	No resonse	No response	No response
Wolf Creek (100 acre core)	Pair Nested 2 Juveniles	Not breeding	No response	No response	No response

3.4.2.2 Environmental Effects

Alternative 1 (No Action)

The No Action Alternative would have little impact on late-successional forest and old-growth forest associated species in the Planning Area at this time. If harvesting is deferred in the future, stands would continue to develop as older forest, with the effect of contributing additional large standing and downed wood. However, stands would likely be reviewed under future actions for harvesting. It would not likely support additional productive owl sites. Temporary and permanent right-of-way construction would continue on BLM and private lands to allow private harvesting, removing suitable and dispersal habitat. The survival of spotted owl sites within the Klamath Demographic Study Area would remain stable, and contribute to a stable population within the Klamath Province (USDA/USDI 2004b).

The lack of fuels treatments would increase the risk of stand replacement fire within the Planning Area (see Section 3.2.2). Catastrophic loss of vegetation would threaten late-successionally affiliated species which depend on these forest habitats for survival, reproduction, and dispersal.

Alternative 2 (Proposed Action)

Table 3-4. Spotted Owl Sites within the 5 Rogues Project Area (Alt. 2)

Spotted Owl Sites	5 Rogues units affecting owl sites within approximately 0.7 miles	5 Rogues units affecting owl sites within approximately 1.3 miles
Colby	none	35-5, 35-6
Dead Shank	none	13S-1, 13-S2, 13S-3C
Dog Tunnel East	none	15S-2, 15S-4, 15S-6, 15S-7
Flume	29-1 (SC), nesting habitat 32-1 (RH), nesting habitat 27-1A (CT);33-5 (CT), roosting/foraging habitat	27-1A, 27-1B, 27-2, 27-3, 27-4, 29-1, 32-1, 33-5
Free Fall	10-1 (GS), nesting habitat	10-1, 15-3
Malone Peak	none	29-1, 32-1, 33-5
Tunnel Ridge	10-1 (GS), nesting habitat	10-1, 15-3
Wolf Creek	none	27-1A, 27-2, 27-3, 27-4, 29-1

There are eight spotted owl activity centers in or near the Planning Area: Colby, Dead Shank, Dog Tunnel East, Flume, Free Fall, Malone Peak, Tunnel Ridge, and Wolf Creek. Many of the proposed harvest units are within 1.3 miles of a spotted owl activity center, the average home range radius for owls within the Klamath Province, and are considered suitable habitat (see Table 3-4).

Owls could move their locations slightly each year, or use an alternate site in a significantly different area, so whole units are included in the above table for estimation. The actual use of habitat within owl sites (home range) depends on topography, distance to adjacent owl sites, and on distribution and size of habitat types on the landscape. The 1.3 mile radius for owls in the Klamath Province is also an average radius range from a nest center.

Under Alternative 2, RH, and GS units (6S-5, 9-1, 9-2, 10-1, 15S-4, 15S-6, 15S-7, , and 32-1) would remove approximately 115 acres of suitable nesting/roosting/foraging (NRF) habitat, and approximately 549 acres would be downgraded from suitable to dispersal (units 1S-4A, 1S-4B, 1S-7, 5S-1, 5S-2A,5S-2B, 5S-3, 13S-1, 13S-2, 13S-3A, 13S-3B, 13S-3C, 15S-2A, 15S-2B, 15S-2C, 15S-2D, 15S-2E, 15S-2F, 15-3,27-1A, 27-1B, 27-1C, 27-2, 27-3, 27-4, 29-1, 32-2, 32-3, 33-5, 35-2A, 35-2B, 35-3, 35-5, 35-6, 35-7, and 35-8).

No RH or GS units are immeditately adjacent to nesting areas of any of the known owl sites within the Planning Area. Effects from this alterantive are mostly the reduction of suitable habitat in the outer perimeters of most of the known owl sites, with the exception of the Flume owl site, in which approximately 25 acres of regeneration harvest and selection cutting will occur within 0.7 miles of the nest site; and the Tunnel Ridge and Free Fall owl sites, in which the 1 acre group selection unit will occur within 0.7 miles of the nest sites. The loss of habitat may result in a loss of prey availability for adults and young, reduced productivity of young, and the availability of other potential nesting areas used either by known owls, or undiscovered owls.

The effect of harvesting on the viability of spotted owls is determined by disturbance to nesting owls and modification of habitat at the USFWS Section 7 Watershed scale (USDI 2003, BO p. 70) through consultation with the USFWS. The amount of anticipated adverse impacts to spotted owls in the Planning Area has been accounted for through consultation and incidental take with the U. S. Fish and Wildlife Service (USDA/USDI 2003). The Fish and Wildlife Service analyzed incidental take of northern spotted owls, by accounting for incidental take by the removal or degradation of all suitable habitat acres. Suitable habitat is considered to be forest with older structure, multiple canopies, canopy closure of 60 percent or greater, and having conifers at least 24" in diameter (p. 40, USDA/USDI 2003). The proposed action would result in a "take" of suitable northern spotted owl habitat, based upon the habitat removal of approximately 115 acres in RH and GS units, and habitat downgrading of approximately 549 acres of suitable habitat to dispersal habitat through CT and SC units.

Habitat fragmentation from the checkerboard arrangement of public and private land is a serious problem in the Planning Area. Most of the private land has been intensively harvested, much of it in the last few decades. It is not currently suitable, nor expected to be suitable habitat in the future. Harvesting late successional stands would reduce the viability of some of the sites on matrix lands. The primary role of matrix lands, including 100 acre owl cores, riparian reserves, and other land use allocations such as connectivity blocks, would provide short-term habitat (USDA/USDI 2003, BA p. 72). The reduction of suitable habitat in the Planning Area is still within the predictions of the NFP and the Biological Opinion.

The proposed 1.10 miles of temporary road construction is expected to impact approximately 1.2 acres of late-successional habitat. Approximately 0.1 net miles of proposed road decommissioning and 0.8 miles of gating would result in a reduction of disturbance impacts to late-successionally affiliated wildlife species, add to the development of late-successional forest, and subsequently reduce the risk of predation.

Harvesting late-successional stands would reduce the viability of owl sites on matrix lands as anticipated in the NFP (USDA/USDI. 1994a 3&4-241). The effects of disturbance, loss and degradation of habitat due to fire, harvesting, road construction, manifested in the spotted owl population decline rate, are not greater than was analyzed in the RMP (USDA/USDI 1994, p. 4-78) and NFP (USDA/USDI.1994a, pp. 3&4 -211-234). The USFWS compared the Proposed Action with other actions within the watershed and found the loss of suitable habitat to be reasonably well distributed (USDA/USDI 2003, BO p. 71) and would not preclude spotted owl movement across the watershed. The Proposed Action would result in a "take" of suitable northern spotted owl habitat (USDA/USDI 2003 p. F-2).

The Rogue Middle watershed baseline suitable habitat is 69,975 acres. The cumulative removal of 115 acres of suitable habitat combined with other projects consulted on within the watershed, is less than 3% (1,891 acres of 69,975 acres, USDA/USDI 2003 Table 9 p. 73) with loss of suitable habitat reasonably distributed throughout the Rogue Middle watershed. The Proposed Action was designed under the guidelines of the NFP and RMP, and project design criteria would minimize impacts to the spotted owl. The spotted owl sites in the Planning Area affected by the Proposed Action are not expected to change the population trend in the Klamath Province. The survival of spotted owl sites within the Klamath Demographic Study Area would remain

stable, and contribute to a stable population within the Klamath Province (USDA/USDI 2004b 4).

Alternative 3 (Hydrology, Wildlife Emphasis)

Table 3-5. Spotted Owl Sites within the 5 Rogues Project Area (Alt. 3)

Spotted Owl Sites	5 Rogues units affecting owl sites within approximately 0.7 miles	5 Rogues units affecting owl sites within approximately 1.3 miles
Colby	none	35-5, 35-6
Dead Shank	none	13S-1, 13-S2, 13S-3C
Dog Tunnel East	none	15S-2F,
Flume	32-1 (RH), nesting habitat 27-1A (CT);33-5 (CT), roosting/foraging habitat	27-1A, 27-1B, 27-2, 27-3, 27-4, 32-1, 33-5
Free Fall	10-1 (GS), nesting habitat	10-1, 15-3
Malone Peak	none	32-1, 33-5
Tunnel Ridge	10-1 (GS), nesting habitat	10-1, 15-3
Wolf Creek	none	27-1A, 27-2, 27-3, 27-4

Alternative 3 would result in a "take" of suitable northern spotted owl habitat, based upon the habitat removal of 51 acres in four regeneration harvest and one group selection unit, and habitat degradation of 419 acres in 29 commercial thinning units. Under this alternative, the 49-acre unit #29-1 would be deferred, reducing effects from selectively cutting this unit within the 0.7 mile home range of the nesting Flume owl pair.

The Rogue Middle watershed baseline suitable habitat is 69,975 acres. The cumulative removal of 51 acres of suitable habitat combined with other projects consulted on within the watershed, is less than 3% (1,891 acres of 69,975 acres, USDA/USDI 2003 Table 9 p. 73) with loss of suitable habitat reasonably distributed throughout the Rogue Middle watershed. The Proposed Action was designed under the guidelines of the NFP and RMP, and project design criteria would minimize impacts to the spotted owl. The spotted owl sites in the Planning Area affected by the Proposed Action are not expected to change the population trend in the Klamath Province. The survival of spotted owl sites within the Klamath Demographic Study Area would remain stable, and contribute to a stable population within the Klamath Province (USDA/USDI 2004b 4).

3.4.3 Fishers (Federal Candidate Species for Threatened & Endangered Listing and Special Status -Sensitive)

3.4.3.1 Affected Environment

Fishers are secretive small mammals which are candidate and Bureau Sensitive species, found to be warranted for listing under ESA in 2004, but precluded due to other USFWS priorities. Fishers have been found approximately ten miles southwest of the Planning Area boundary, three times with visual observation (Kerwin 2004b). Remote camera surveys initiated to protocol (Zielinski 1995) since 2001 have thus far failed to detect this species in the Grave Creek

watershed, although the proximity of fisher observations and potential habitat suggest fishers may be present in the general area.

Fishers are associated with closed canopy forest in late-successional forests throughout its range in the Western United States, often associated with riparian areas (Buck 1983, Aubry and Houston 1992, Dark 1997, Golightly et al 1997). Zielinski et al (1996, 1997) found overhead cover associated with fisher locations. Jones and Garton (1994) noted that fisher did not use non-forested lands (<40% cover). Powell and Zielinski (1994) generalized an average home range for fishers as 40 and 15km^2 for males and females respectively, although individuals can range long distances (5-6km) in a single day. Home range calculations are difficult to estimate due to this tendency. Females use cavities in large diameter trees, documented from 56cm in Idaho (Jones 1991) to an average of 67cm in the southern Sierra (Zielinski et al 1996) for pups, and are known to move the young periodically. Dark (1997) found fisher detections negatively associated with traffic. The fisher was analyzed in the NFP and failed to pass the species viability screens due to its dependence on interior forest habitat and large, down woody debris (USDA/USDI 1994, Appendix J-2,). Golightly (2004) speculates that associates showing fisher as a late seral "obligate" may be more an artifact of attributes of later seral forests; lack of roads, large blocks of closed canopy, and minimized human influence.

Approximately 28,149 acres of the 50,273 acres of BLM administered lands, within the 104,371 acre Grave Creek watershed are considered to be late-successional forest (USDI 1999).

As stated previously, fishers appear to have an affinity for riparian habitats and large downed wood. Approximately 40% of the federal ownership in this watershed includes riparian reserves, which provide the greatest amount of structural diversity of all seral stages. Currently, approximately 63% of riparian habitat in the Grave Creek watershed is in a late-successional condition (p.16, USDI 1999). Two surveys of downed wood in the watershed (USDI 1999, p. 45) indicate that natural levels of large woody debris may be quite low, below the 120' per acre of Class 1 or 2, 16" in diameter.

3.4.3.2 Environmental Effects

Alternative 1 (No Action)

The Planning Area would continue to be poorly suited for fishers due to the checkerboard ownership, harvest age rotation of 40-60 years on private lands, past harvest, fragmentation, and low quantity of late-successional forest on BLM. The fisher was analyzed in the NFP and failed to pass the species viability screens due to its dependence on interior forest habitat and large, down woody debris (Appendix J-2, USDA/USDI 1994). This alternative would not change the trend predicted in the NFP.

Action Alternatives (Alternatives 2 & 3)

The nearest known sighting is approximately 10 miles away near Galice but it is possible that fishers may occur or disperse within the Planning Area. The suitability of potential den sites

may be reduced due to harvesting. However, harvesting of small group select units and smaller older fragmented stands isolated by early seral stage vegetation would minimize the impact to this species. Alternative 2 would remove 115 acres of late-successional forest through RH and GS harvest, and downgrade the suitability of 80 acres from SC units. Alternative 3 would remove 51 acres of late-successional forest through RH and GS harvest, and downgrade the suitability of 31 acres from SC units.

Cumulative effects

Due to the small size and isolation of late-successional forest units from previous harvesting on BLM matrix land and private within the Planning Area, it is possible that the area may no longer be suitable for resident fishers. The largest late-successional blocks are expected to continue be restricted to LSRs. The adverse impacts on any individual fishers in the Planning Area or the population as a whole are not known. Some restriction in movement corridors for fisher in or adjacent to the project is likely, and may slowly be facilitated by maturing riparian reserves. The extent of this reduction on the overall habitat conditions of fishers is unknown. The fisher was analyzed in the NFP and failed to pass the species viability screens due to its dependence on interior forest habitat and large, down woody debris (Appendix J-2, USDA/USDI 1994). This project would not change the trend predicted in the NFP.

3.5 Fish/ Streams/ Riparian Habitat

3.5.1 Affected Environment

Watershed Condition

Land ownership is intermingled, owned by BLM, timber companies and private individuals. Less than 50% of the acreage in the Planning Area is under BLM management. Much of the land that is occupied by small farms and residences in the Grave-Placer, Grave-Sunny Valley and Wolf Creek HUC 6 watershed is situated on or adjacent to historic floodplains. Most activities on these lands are agricultural (primarily hobby farms and livestock grazing). The majority of private forest lands in the HUC 5 have been tractor logged within the last 50 years resulting in soil compaction and erosion. Much of the tractor logging and log hauling from private lands takes place throughout the year and results in stream sedimentation, especially during winter months. It is expected that ground disturbance on private lands would continue.

There has been considerable timber harvest activity in these three HUC 6 watersheds in the recent past (Table 3-6); most of it on private lands. Some of it has been in the transient snow zone (TSZ) lands above approximately 2500 feet elevation. Six to 46 percent of each HUC 6 watershed is in the transient snow zone (Table 3-6), generally above 2500 feet elevation. Watersheds with open forest canopy in the transient snow zone are more susceptible to accelerated runoff and higher peak flows from rain-on-snow events than are same size watersheds at lower elevation where precipitation usually falls as rain, rather than snow. Hydrologic risk factors such as percent of each HUC 6 in TSZ, percent of acreage less than 30 years of age following most recent disturbance (generally wildfire or timber harvest), as well as road density and stream channel condition are used to evaluate the risk of rain-on-snow events.

Rain-on-snow events could potentially destabilize stream channels and degrade habitat for fish and other aquatic species.

Between 6% and 11% of acres on all ownerships in the three 6th field watersheds (Table 3-4) have been compacted by tractor logging, road construction and conversion to residences and small farms. Soil compaction reduces soil productivity and vegetation growth rate by decreasing soil porosity and increasing density, which in turn reduces moisture infiltration rate and potentially increase surface runoff.

Road density is high in the three HUC 6 watersheds, ranging from about 4 to nearly 6 miles per square mile. The surface condition of about 40% of the road network miles in the Planning Area (virtually all in private commercial forest ownership) is not well-documented but most probably is native surface. Although most BLM roads are rocked, some constructed decades ago do not meet current standards for drainage, safety and other concerns.

Acres that have been disturbed by logging or wildfire since 1974 in each of the three HUC 6 watersheds are in various stages of vegetation regrowth and hydrologic recovery (Table 3-7). Vegetation is considered to be in an advanced stage of hydrologic recovery 20 years after disturbance and substantially complete by age 30 (Harr 1989, Adams and Ringer 1994). Analysis of satellite imagery for disturbance to the forest canopy in the project area for the period of 1974 to 2002 (28 years) strongly suggests that most vegetation is functioning at its hydrologic potential, because 76 to 84% is at least 28 years of age (Table 3-6). However, when numerous other factors are considered (i.e. water quality, stream habitat, channel condition, flow characteristics and other watershed features), the Grave-Sunny Valley, Grave-Placer and Wolf Creek 6th field watersheds are functioning below potential (functioning-at-risk), primarily because of past and current human activity (Appendix 3).

Table 3- 6. Current watershed condition in the Five Rogues Timber Sale Area

HUC 6	% BLM	Total Acres	Road Density (mi. per sq. mi.)	**Estimated percent area compacted**	**Baseline Conditions.** Minimum % of all acres in the HUC 6 in hydrologic recovered/unrecovered condition in 2002, based on appearance of new openings in the forest canopy between 1974-2002	Transient Snow Zone (TSZ) Acres	% Transient Snow Zone Acres Of All HUC 6 Acres	**Baseline Conditions.** Minimum % of all acres in the TSZ in hydrologic recovered/unrecoverd condition in 2002, based on appearance of new openings in the forest canopy between 1974-2002
Grave-Placer	48	12,792	5.3	8	10,614 acres (83%/17%)	5853	46	82/18
Grave-Sunny Valley	31	19,572	5.6	11	14,850 acres (76%/24%)	1225	6	83/17
Wolf	48	28,343	4.4	6	23,799 acres (84%/16%)	7297	26	82/18

Landsat remote sensing technology was used to determine the percentage of each HUC 6 where openings in the forest canopy appeared (minimum resolution= 1.1 acres) between 1974 and 2002. Acreages are estimates based ion satellite imagery. Acreage where openings did not appear during this time period is assumed to be largely or in fully functioning hydrologic condition since vegetation is in an advanced stage of hydrologic recovery after 20 years and substantially complete by age 30 (Harr 1989; Adams and Ringer 1994). An exception to this is land in non-forest: agricultural and rural residential land, roads, rock quarries, etc. that has been in this condition for decades and most likely would not change for the foreseeable future. These open, compacted non-forest acres comprise 6 to 8% % of all acres in each HUC 6 and are included in baseline conditions. Openings that appeared during 1974-2002 are in various stages of hydrologic recovery. Therefore, estimated percent of acres in proper hydrologic functioning condition in columns 6 and 9 of this table are **minimums**.

Table 3- 7. Year and acreage of vegetation disturbance (fire, timber harvest, etc.) in the Five Rogues Planning Area. Disturbed vegetation is generally in an advanced stage of hydrologic recovery after 20 years and substantially complete by age 30 (Harr 1989; Adams and Ringer 1994).

Disturbance Period							
Year of comparison satellite photography	Years since disturbance	Wolf Creek HUC6 acres disturbed	% of acres disturbed between 1974 and 2002	Grave Creek-Sunny Valley HUC6 acres disturbed	% of acres disturbed between 1974 and 2002	Grave Creek-Placer Acres HUC6 disturbed	% of acres disturbed between 1974 and 2002
1974-1984	18 to 28	1004	27	477	15	392	26
1984-1989	13 to 18	825	22	1092	35	410	27
1989-1995	7 to 13	1218	33	720	24	348	23
1995-1999	3 to 9	383	10	499	16	306	20
1999-2002	0 to 3	313	8	304	10	68	4
Totals		3742	100	3092	100	1525	100

Streams and Riparian Habitat

There are about 21 miles of fish habitat in the project area (Table 3-8). The more familiar species include steelhead and cutthroat trout, Chinook and coho salmon and Pacific lamprey. Grave Creek, Coyote Creek and Wolf Creek provide habitat for Southern Oregon/Northern California (SO/NC) coho salmon, an ESA-listed Threatened species. Most of the streams in the Planning Area are functioning at less than optimum condition (Table 3-8 and Appendix 3 [Pathway Indicators]), a situation that began in the late 1800s with the advent of large scale placer mining that used hydraulic giants, especially in mainstem Grave Creek, Wolf Creek and Coyote Creek, but also on some smaller streams like Flume Gulch. A few small floating dredges, that involved moving a stream from one side of a valley to the other as it worked, operated in Grave Creek briefly in the 1930s. Large scale timber harvest began in the 1950s; road construction and timber harvest led to accelerated stream sedimentation, increases in water temperature, loss of large wood in stream channels and migration barriers to fish at road/stream crossings. Road building and timber harvest on many streams over the years removed mature conifers that would otherwise would have contributed to pool formation and complexity and played a major role in dissipating stream energy and routing of sediment, gravels and organic materials from headwaters to the mouth.

Table 3- 8. Approximate miles of fish habitat in the Five Rogues Timber Sale

Planning Area.

Stream Name	Miles of Fish Habitat
Grave Creek	8.5
Mackin Gulch	0.6
Flume Gulch	2.5
Mill Creek (Dog Creek)	1.2
Rat Creek	1.4
Burgess Gulch	0.9
Benjamin Gulch	0.3
Coyote Creek	4.6
Wolf Creek	3.1

Grave, Wolf and Coyote creeks are on the State of Oregon 303(d) list of water quality-impaired streams (ODEQ 2003), having an average water temperature of more than 64 degrees during at least one 7 day period of record during summer months. This condition is partly due to natural factors related to climate and geology, but also to water diversion, land clearing (agricultural use), timber harvest and road construction in riparian areas, and historic placer mining.

Most riparian zones in the watershed on private and federal lands do not support the vegetation that is needed for stream and riparian integrity as described in the Northwest Forest Plan. For instance, only 55% of riparian reserve acreage on BLM lands (5,074 of 9,224 acres) is greater than 80 years of age, the age at which late-successional characteristics begin to appear (USDA/USDI 1994; p.B-3). The percentage is probably considerably less on private lands.

Culverts block or impede movement of aquatic animals, such as fish and amphibians, where they constrict channel width (increase water velocity), have “falls” at the outlet or do not contain adequate amounts of streambed substrate. Although several barriers to salmon and steelhead migration have been replaced in recent years through watershed restoration funding, some remain that block or impede passage of cutthroat trout and amphibians on other streams (USDI 1999). This situation may have implications for long-term survival and genetic diversity.

Un-maintained or poorly maintained roads contribute sediment to streams, reducing habitat suitability for fish, amphibians and other aquatic vertebrate and invertebrate species. High road density may have altered the timing of peak flows following storms. Tractor logging, done mostly on private lands, has always been the most economical method of removing logs from harvest units, but also causes the most soil compaction and has the highest risk for soil erosion and stream sedimentation, especially when conducted during the wet season. Although more haul roads on private lands are rocked now than they used to be, they are still serious sources of stream sediment when used for winter log haul. Most BLM roads are rocked; natural surface roads on BLM are only used for log hauling during the dry season. Tractor logging on BLM is allowed between May15 and October 15. While logging on all ownerships is more environmentally sensitive today than it was 50 years ago (e.g. less tractor logging on steep slopes, more rocked roads and more water-barred tractor skid roads), it still can contribute sediment to streams (Table 3-9).

Table 3 - 9. Baseline Condition of Key Elements of Fish-bearing Streams in the Five Rogues Timber Sale Planning Area.

Habitat Element	Function	Current Condition	Properly Functioning Condition
Riparian Reserves	Essential for water temperature control and the source of large wood for: pool formation and complexity, side channels in low gradient channels; routing of sediment, organic material and gravel; refuge for fish and amphibians from predators and high water velocity. Condition on BLM lands influences stream conditions on private lands (and vice versa).	Riparian reserve quality: Poor. Only about 55% of BLM riparian reserves are more than 80 years of age (USDI 1999), the stage at which late- successional characteristics begin to appear. (USDA/USDI 1994, p. B-3). Riparian habitat quality across all ownerships: Although data is unavailable, the percentage of riparian habitat in proper functioning condition is probably considerably less than 30%. Virtually no large down wood (ODFW 1998).	Riparian reserves provide adequate shade, future large wood, habitat protection and connectivity for sensitive aquatic species. Little or no evidence of salvage; sufficient down wood or within range of expected conditions. At least 80% intact. NOAA Fisheries (2004).
Streambed Sediment	Small amounts of sediment in montane streams of this region are essential for production of some species of aquatic insects and fish. Stream substrate with low sand, silt and clay contributes to a diverse aquatic insect community (major food source for amphibians and fish) and has a minimal negative effect on survival of amphibians and salmonids.	Moderate to high substrate embeddedness, based on aquatic macroinvertebrate sampling (Aquatic Biology Associates 1996, 2000).	<20% fines in gravel; little cobble embeddedness NOAA Fisheries (2004).
Stream Channel Stability	When within range for site potential (e.g. geology, soil type, and channel type), it contributes to optimal hydrologic functioning and interaction with riparian zone.	W:D ratio is within the range for these B and C channel types (ODFW 1998). Streambank stability: generally exceeds 80%, with some problems areas related to historic placer mining and tractor logging, especially in Flume Gulch (ODFW 1998).	Width: depth ratio for specific channel types are within the natural range and site potential. W:D ratio: Between 12 and 30 for B and C type channels (ODFW 1998). Streambank stability: little evidence of eroding banks or within range of expected conditions. NOAA Fisheries (2004).
Habitat Connectivity	Allows aquatic species to select appropriate habitats at various times of the year. Also allows for genetic	There are two known road culverts in the Planning Area that are barriers to fish migration (USDI 1999)	No human-caused barriers

Habitat Element	Function	Current Condition	Properly Functioning Condition
	interchange.		

Essential Fish Habitat

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), in concordance with the Sustainable Fisheries Act of 1996 (Public Law 104-267) designated Essential Fish Habitat (EFH) for coho and chinook salmon (Federal Register, Vol. 67, No. 12). The MSA defined EFH as "...those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (Federal Register, Vol. 67, No. 12)."

Table 3 - 10. **Estimated miles of Essential Fish Habitat (Magnuson-Stevens Act) in the Five Rogues Timber Sale Area.**

Stream Name	Miles of EFH for coho salmon*	Miles of EFH for chinook salmon
Grave Creek	8.5	8.5
Wolf	1.3	-
Coyote	4.6	-

3.5.2 Environmental Effects

Alternative 1 (No Action)

No roads would be built or decommissioned at this time. Some roads left un-maintained would continue to erode and contribute sediment to streams, including habitat for Southern Oregon/Northern California coho salmon, an ESA-Threatened species. Without road maintenance there would be no short-term addition of sediment to streams. However, the beneficial long-term effects of reducing stream sedimentation by improving road drainage would not occur under this alternative. The net effect would be to allow the present levels of erosion and stream sedimentation to continue and increase over time, an overall adverse effect on streams and fish habitat.

Timber harvest and log hauling would continue on private commercial forest lands. Given the checkerboard ownership pattern of private and federal lands in the watershed, habitat suitability for aquatic species would remain in fair to poor condition. Harvest would occur at another location under separate NEPA analysis in order to meet harvest commitments identified in the RMP (pp. 3, 17). Selection of this alternative would not constitute a decision to reallocate these lands to non-commodity uses. Future harvesting in this area would not be precluded and could be analyzed under a subsequent EA.

Riparian Habitat - Selecting the No Action Alternative would not forego opportunities for

riparian restoration activities because none are proposed under the action alternatives. Riparian condition would be maintained and reach properly functioning condition over time. Vegetation at an existing log landing adjacent to Unit 27-2 along the outer edge of a riparian reserve would continue to recover, eventually becoming a source of large diameter trees and down wood for the riparian reserve in 8 to 10 decades, if the area is not used as a log landing in the future.

Stream Sediment - No roads would be built, decommissioned or renovated. There would be no short-term addition of sediment to streams from road construction, maintenance or decommissioning. Other roads on BLM and private lands in the watershed would continue to contribute sediment to streams if not adequately maintained. The present levels of erosion and stream sedimentation on BLM lands within the Planning Area would continue and would increase over time, an overall adverse effect on streams and fish, including habitat for Southern Oregon/Northern California coho salmon, an ESA Threatened species; Klamath Mountain Province summer-run and winter-run steelhead trout and Southern Oregon Coast/California Coast Chinook salmon (Bureau Sensitive).

The beneficial long-term effects of reducing stream sedimentation by improving road drainage would not occur under this alternative. The net effect would be to allow the present levels of erosion and stream sedimentation to continue and increase over time, an overall adverse effect on streams and fish habitat.

Stream Channel Stability - This habitat factor would be maintained under the No Action Alternative because there would be no canopy removal or increase in compacted area.

Stream Habitat Connectivity - Stream habitat connectivity would continue to function below potential because no stream culverts would be replaced or removed.

Essential Fish Habitat - Habitat for Southern Oregon/Northern California coho salmon and Southern Oregon Coast/California Coast Chinook salmon would continue to function below potential under this alternative because there would be no road renovation to improve drainage and reduce ersoion.

Alternative 2

Table 3 - 11. Summary of Harvest and Road –related Actions by Alternative in each 6th field watershed. Numbers in bold represent acres within the transient snow zone.

Grave Creek –Sunny Valley HUC 6			
	Alternative 1 (No action)	Alternative 2	Alternative 3
Harvest Type (acres) RH CT (40%cc) SC Total Acres		 103 (25%) 221 (55%) **9** 80 (20%) **62** 404	 50 (17%) 221__(73%) **7** 31 (10%) **13** 302
Roads (miles) Construction			

permanent temporary Decommissioning Tractor logging acres		0.04 0.5 mile (2 spurs) 0 49 acres	0.04 0.5 mile (2 spurs) 0 0
Grave Creek –Placer HUC			
Alternative 1 (No action)	Alternative 1 (No action)	Alternative 2	Alternative 3
Harvest Type (acres) RH CT (40%cc) CT (60%cc) Total Acres		 11 (7%) 65 (40%) 86 (53%) **49** 162	 0 (14%) 65 (64%) 46 (36%) 101
Roads (miles) Construction Permanent Temporary Decommissioning Tractor logging acres		 0.00 0.6 (4 spurs) 0 0	 0 0.4 (2 spurs) 0 0

Wolf Creek HUC 6			
	Alternative 1 (no action)	Alternative 2	Alternative 3
Harvest Type (acres) RH/GS CT (40%cc) Total Acres		 1 (1%) 97 (99%) **11** 98	 1 (1%) 97 (99%) **11** 98
Roads (miles) Construction permanent temporary Decommissioning Tractor logging acres		 0 0 0.1 mile (1 spur in a Riparian Reserve) 0	 0 0 0.1 mile (1 spur in a Riparian Reserve) 0

None of the key stream habitat factors (Table 3-7) would be degraded in the long term in the Planning Area.

Riparian Habitat - Riparian habitat quality, (including stream shade, water temperature and sources of large down wood) would be maintained in the short and long term because, with the exception of one harvest unit (27-2) there would be no harvest, yarding corridors, log landings, site preparation or road construction in riparian reserves

There is a 90 to 170 feet wide stand of mature Douglas fir forest between the edge f a 300 foot long existing log landing, that would be used for Unit 27-2, and a perennial stream. The stream is fully shaded at present. Clearing shrubs and young conifers in the existing landing to make it suitable as a helicopter landing for unit 27-2 would have no effect on water temperature and a very small (if any) effect on future down wood in the stream channel. Only 15% of large down wood in streams originates from beyond about 100 feet from the channel (McDade et al., p. 330). The effect of clearing the minor amount of shrubs and young conifers would be to set back vegetation succession.

Stream Sediment - Although tree felling, log yarding, prescribed burning, road construction and rock quarry operations are ground-disturbing activities, they would contribute little, if any, soil to streams. Soil that moves on cable yarding corridors during storm events would be trapped by logging slash or by ground cover on undisturbed ground at the bottom of yarding corridors. Tractor yarding and road building would be restricted to the dry season (May 15 to October 15) when there is low potential for runoff from compacted ground. Sub-soiling skid trails and temporary roads under dry soil conditions would shatter soil compaction by as much as 80% (Davis, pp. 138. 139), substantially increasing water infiltration during storm events. None of the tractor skid roads and new road construction (temporary and permanent) would contribute sediment to streams because they are located on or near ridges several hundred yards from any stream. Most soil that leaves cable yarding corridors and enters road ditchlines would be routed

through crossdrain culverts onto vegetated, uncompacted forest soils. Riparian reserves 150 feet wide would effectively prevent any loose soil, generated by log yarding and pile burning, from reaching streams because they have substantial depth of duff-litter and vegetative ground cover. A deep duff layer in the 90 to 170 foot wide riparian buffer next to the log landing for unit 27-2 would be more than capable of trapping any soil that moves from the landing during storm events. Literature indicates that buffer strips of 30 meters (98 feet) or greater prevent adverse sedimentation effects from logging on salmonid eggs and alevins development (Moring, pp. 295-298) and are adequate to maintain macroinvertebrate diversity at pre-harvest levels (Belt, p. 11). Log landings would be mulched and seeded after proper drainage has been established in order to prevent soil movement. Streambank stability would be maintained because there would be no yarding across streams.

Rock quarry operations would not negatively affect aquatic habitat or water quality because rock for road maintenance would not be obtained from any quarry that is in a riparian reserve.

Gating the 34-6-10A Coulter Mainline Road would prevent vehicles from using nearly a mile of natural surface road during winter which would reduce the potential for erosion and stream sedimentation (i.e., vehicle use of mid-slope unsurfaced roads during the wet season usually leads to extreme erosion and stream sedimentation).

It is likely that road maintenance (including culvert replacement), removing a stream culvert on road 33-6-27.4 and log hauling would contribute sediment to streams and would be immeasurable more than several hundred feet downstream of road crossings. Any soil that enters stream channels would be initially stored in small headwater streams behind abundant woody debris in 1st, 2nd and 3rd order streams and be released over time during storm events, becoming indistinguishable from baseline conditions. Although there may be small, negative effects on amphibians and other aquatic species within several hundred feet of road crossings, any sediment that reaches resident trout, steelhead and salmon habitat would be undetectable and have no measurable effect on survival, food supply or on quality of spawning and rearing habitat, primarily because appropriate PDFs would be used to minimize the amount of soil that these activities contribute to streams. For instance, blading road prisms, including ditchlines, and cleaning culvert inlets would be limited to where absolutely necessary to maintain proper drainage and to limit the amount of soil disturbance. (Note: blading ditchlines typically involves removing only obstructions to flow [e.g. such as soil and rock from road cutslope failures and dense growth of vegetation that is forcing water onto the road prism). A study by Luce and Black (pp. 2561-2570) showed substantial reductions (about 80 percent) in sediment delivery to roads in the Oregon Coast Range where well-vegetated or armored (covered with rock fragments) ditch lines of rocked roads were left ungraded. Plus, as much soil as possible would be removed from stream channels following replacement or removal of culverts.

Any sediment that reaches resident trout, steelhead and salmon habitat would have no measurable effect on the species because it would be dispersed immediately by much higher flow. For instance, nearly 48,000 acres of watershed contribute to streamflow in mainstem Grave Creek above the Flume Gulch/Mackin Gulch/Brushy Gulch vicinity. More than 5,100 acres of watershed contribute to flow in Coyote Creek above the confluence of Miller Gulch watershed where sediment could be contributed from road renovation. Frequent wildfire in this watershed, followed by intense rainstorms, has historically been the primary contributor of sediment to steams. Any sediment that the streams contribute to Grave Creek as a result of the Proposed Action would be well within conditions of natural disturbance (USDI 1999, p 27).

Log haul and road maintenance would be limited to dry road conditions, regardless of whether a road is rocked or natural surface. There are no stream crossings associated with natural surface roads; therefore, any soil that leaves these roads during storms events would be retained by the duff layer and other ground cover. Hauling would be suspended on any road any time of year that water on a road or in ditchlines increases stream turbidity. Thirty one of 67 streams that cross haul roads (i.e., roads to be maintained) are typically dry during summer and therefore provide no mechanism for delivering sediment to streams at the time of year when habitat quantity and quality is most limiting for aquatic species. Most fines that are generated by log hauling during the standard May 15 to October 15 log haul season, as well as loose soil that is generated by blading priority segments of ditchlines, would be routed through crossdrain culverts onto uncompacted, vegetated ground. Sediment that is not captured by crossdrain culverts, as well as soil that is disturbed during culvert inlet cleanout would be mobilized during the first major storm event of the wet season and become an immeasurable portion of background sediment levels several hundred feet downstream of the road crossing. Because the miles of haul road and the harvest units are spread across several townships, log truck traffic (along with associated rock wear) would not be concentrated on just a few roads (leading to accelerated rock wear) until they reach valley bottoms where roads nearest critical habitat are paved (Grave Creek, Coyote Creek and Wolf Creek).

Although there would be a slight, short term increase in sediment input to streams from road maintenance, the activity would have potential beneficial effects on fish, amphibians and other aquatic species in the long-term. However, these beneficial effects may not be readily apparent because other roads in the Grave Creek 5th field watershed would continue to contribute to stream sedimentation.

Cumulative effects of the action on stream sediment would be undetectable at the 6th field watershed scale because of project design, including unit placement, and use of appropriate BMPs (USDI, 1995) and PDFs for minimizing the amount of sediment that project activities contribute to streams. Total road density and potential for soil erosion would not increase because only 200 feet of permanent road (#34-6-10B) would be built; all temporary and permanent roads are on or near ridges, do not cross streams and are several hundred yards from any stream.

Stream Channel Stability - It is unlikely that any timber sale activity (i.e., log yarding and hauling; road construction; road maintenance, road construction, road decommissioning, gating, or site preparation) under the Proposed Action, other than tree felling, would have any effect whatsoever on peak or base flows because they have no mechanisms to decrease canopy closure or to increase runoff from compacted areas.

According to Watershed Professionals Network (1999; p. IV-11), there is potential risk of timber harvest increasing peak streamflow when 26% of a watershed is in the TSZ (above 2500 feet in the Planning Area) and when more than about 90% of the acreage in the TSZ has less than 30% canopy closure. Although about 26% of the Wolf Creek 6th field watershed is in the TSZ, no more than 18% is presently in open condition. That is, at least 82% is functioning at hydrologic potential (Table 3-6). Potential risk of flow enhancement also increases when 46% of a watershed is in the TSZ and more than 70% has less than 30% crown closure. Although about 46% of the Grave Placer 6th field watershed is in the TSZ, no more than 18% is presently in open condition. Only 6% of Grave Sunny Valley 6th field watershed is in the TSZ. It is

therefore highly unlikely that proposed harvest in the TSZ under Alternative 2 would have any measurable effect on peak flow and stream channel or streambank stability or on survival of fish, amphibians or other aquatic species.

If a large portion of a watershed is less than 30 years of age, there is risk of increased water yield. Forest vegetation is generally in an advanced stage of hydrologic recovery 20 years after disturbance and substantially completed by age 30 (Harr; Adams and Ringer). Vegetation in these categories is considered to be in properly functioning hydrologic condition. NOAA Fisheries, et al. (2004; p. 24) considers a watershed with more than 15% in open canopy condition to be not properly functioning and at risk for increasing peak flows. This baseline is low compared to other research. After reviewing 94 watershed experiments from around the world, including 15% from the Pacific Northwest, Bosch and Hewlett (1982; p.16) concluded that water yield increases are usually only detectable when at least 20% of the forest cover has been removed. Stednick (1996; pp. 75-79) evaluated twelve studies in the Pacific Coast hydrologic region and determined there is no measurable annual water yield increase until at least 25% of the watershed is harvested.

No more than 24% of the Grave-Sunny Valley 6th field watershed, 17% of the Grave Placer 6th field watershed and a maximum of 16% of the Wolf Creek 6th field watershed are in hydrologically unrecovered condition (Table 3-6). It is unlikely that <u>any</u> of the planned harvest (within and below the TSZ), would measurably increase peak flow, or indirectly affect stream channel or streambank stability, because the number of disturbed acres in these three 6th field watersheds would increase by less than 2%. That is, **at least 74%** of all acres (Table 3-11) in the Grave-Sunny Valley watershed and no less than 82% of the Grave-Placer and 84% of the Wolf Creek 6th field watershed acres would still be functioning properly from a hydrologic standpoint following the proposed harvest under Alternative 2. In addition, no more than 25% of the harvest in each 6th field watershed would be regeneration harvested. Proposed harvest units are spread across the landscape, limiting potential for increasing peak flow in any single stream. There is a low probability that RH units would result in small, immeasurable increases in peak flow in small streams that are downslope of the units (Harr 1976) because much of the forest between units and streams is in proper hydrologic functioning condition (20 to 30 years of age; [Harr 1989; Adams and Ringer 1994]) and capable of utilizing any increase in subsurface flow that originates from harvesting upslope.

It is expected that canopy condition and hydrologic recovery in CT and OR would return to baseline (pre-harvest) conditions within 5 to 10 years, SC in 10 to 15 years, and within 20 to 30 years in GS and RH units. Effects of historic wildfire resulted in far greater acreage in open condition (none or minimal ground cover or canopy closure) and (most likely) higher peak flows in the Klamath Province than at present (Grave Creek Watershed Analysis, 1999). Existing stream channel capacity reflects peak flow conditions under historic wildfire regimes (Harr).

Table 3-12. Effects of Alternatives on vegetation (hydrologic functioning) condition in the 5 Rogues Timber planning area.

HUC 6 Subwatershed	Alternative 1 (No Action – baseline)	Alternative 2	Alternative 3
	Minimum acres in properly functioning condition *	Minimum acres in properly functioning condition **	Minimum acres in properly functioning condition **
Grave-Placer (12,792 acres)	10,614 (83%)	10,452 (82%)	10,538 (82%)
Grave-Sunny Valley (19,572 acres)	14,850 (76%)	14,446 (74%)	14,548 (74%)
Wolf (28,343 acres)	23,799 (84%)	23,701 (84%)	23,701 (84%)

(*) Landsat remote sensing technology was used to determine the percentage of each HUC 6 where openings in the forest canopy appeared (minimum resolution= 1.1 acres) between 1974 and 2002. Acreages are estimates based on satellite imagery. Acreage where openings did not appear during this time period is assumed to be largely or in fully functioning hydrologic condition since vegetation is in an advanced stage of hydrologic recovery after 20 years and substantially complete by age 30 (Harr 1989; Adams and Ringer 1994). (An exception to this is land in non-forest: agricultural and rural residential land, roads, rock quarries, etc. that has been in this condition for decades and most likely would not change for the foreseeable future. Open, compacted non-forest lands comprise 6 to 11% of all acres in each HUC 6 and are included in baseline (Alt 1) and post-harvest calculations (Alternatives 2 through 3). Openings that appeared between 1974 and 2002 are in various stages of hydrologic recovery. Therefore, estimated percent of acres in proper hydrologic functioning baseline condition are **minimums**.

** the **minimum** % of all acres that would be in hydrologic recovered condition under each alternative. Any appreciable disturbance to the forest canopy is counted as decreasing canopy closure. RH, CT and SC units are given equal weight for this analysis, although the amount of residual vegetation would be considerably greater following CT than after RH.

Retaining 60% canopy closure in all harvest units that are in the transient snow zone of Benjamin Gulch (units 5S-2A, 5S-2B, 5S-3, 5S-1, 32-2- and 32-3) would largely ensure that proposed harvest does not incrementally increase peak flow. Eroding streambanks in upper mainstem Benjamin Gulch might be the result of high road density (4.3 miles per square mile) in combination with 20% of the TSZ having been harvested in recent years.

Retaining an average 40% canopy closure across 49 acres of unit 29-1 (Selection cut) in upper Brushy Gulch would minimize but not eliminate the possibility that harvest would cause a small increase in peak flow immediately down stream of the unit where 40 acres were clearcut in 1984. The 20 year old unit may be only at about 50% hydrologic recovery. Again, any increase in peak flow would be within the range of natural variation because existing stream channel capacity reflects peak flow conditions under historic wildfire regimes (Harr). Any increase in peak flow in Brushy Gulch would be undetectable in Grave Creek (coho salmon critical habitat) because of Grave Creek's much higher streamflow (specifically, about 48,000 acres of watershed contribute to Grave Creek streamflow at its confluence with Brushy Gulch).

The 2 acres of soil compaction that would result from temporary road construction in the Grave-

Sunny Valley and Grave-Placer 6th field watersheds and the 6 acres of tractor skid roads in Grave-Sunny Valley would have no localized effect on surface runoff or streamflow because tilling these compacted areas with a winged ripper would shatter compaction by as much as 80% (Froehlich and Miles; Andrus and Froehlich; Davis), and substantially restore water infiltration rate during storms. Compaction from all sources comprises <0.01% of the planning area.

Potential for an increase in baseflow in small streams (e.g. 1st and 2nd order) next to harvest units would be greater next to RH units than CT because RH retains less vegetation following harvest (e.g. 7 to 10 large trees per acre compared to at least 40% canopy closure). Although higher baseflow in small streams would provide more habitat for aquatic life for several years (Ziemer and Lisle, pp. 43-68), the effect would not be apparent in fish-bearing streams because their streamflow originates from much larger watersheds than would be affected by RH harvest units.

Therefore, the Proposed Action would not have incremental effects to past, present and reasonably foreseeable future actions on aquatic habitat beyond the limits of the Planning Area. There would be no effect on riparian habitat, stream habitat connectivity and stream channel stability and only an immeasurable negative (short term) and positive (long term) effect on stream sediment at the project and 6th field watershed scales. The Proposed Action would not negatively affect endangered species act (ESA) listed Southern Oregon/Northern California coho salmon (Threatened), nor would it contribute to the need to list Special Status Species Klamath Province summer-run and winter-run steelhead trout or Southern Oregon Coast/California Coast fall-run Chinook salmon under the Endangered Species Act because any increase in peak flows would be immeasurable and indistinguishable from baseline conditions

Habitat Connectivity - Stream habitat connectivity would be maintained to current condition because no stream culverts would be added, replaced or removed.

Essential Fish Habitat (EFH) - Activities associated with the Five Rogues timber sale would have **no adverse effect** on EFH for Southern Oregon/Northern California coho salmon or Southern Oregon Coast/California Coast fall-run Chinook salmon because any increases in peak flow and sediment, which have been previously discussed, would be immeasurable and indistinguishable from background levels. Effects on EFH would be minimized or prevented by incorporating PDFs Section 2.3 and BMPs (USDI 1995) into the Proposed Action in accordance with the Northwest Forest Plan and the Medford District RMP Record of Decision.

Alternative 3

Riparian habitat - All effects of the alternative on riparian habitat are the same as described in Alternative 2.

Stream Sediment - The potential for adding sediment to Brushy Gulch (Grave-Sunny Valley 6th field) from road maintenance activities would be eliminated because unit 29-1 is deferred in this alternative. Maintenance under a timber sale contract is limited to roads that access harvest units. Road maintenance in Benjamin Gulch (Grave-Placer) and its potential for contributing a small amount of sediment to streams, would still happen in this alternative, even though harvest units in the transient snow zone are deferred, because the roads are still needed to access harvest units that are below the transient snow zone. All other effects on stream sediment are the same as described in Alternative 2.

Stream Channel Stability - The potential for a small, immeasurable increase in peak flow in Brushy Gulch would be substantially reduced because the 49 acre unit 29-1 in the transient snow zone is deferred in this alternative. There is a very low potential for harvest to result in an immeasurable increase in peak flow in Benjamin Gulch because all harvest acres in the transient snow zone, as well as regen harvest unit 6S-5, are deferred in this alternative. There would be no increase in base and peak flow in several small streams downslope of units 15S-4, 15S-6 and 15S-7 because these RH units would be deferred in this alternative. All other effects on stream channel and streambank stability are the same as described in Alternative 2.

Habitat Connectivity - All effects of the alternative on stream habitat connectivity are the same as described in Alternative 2.

Essential Fish Habitat - All effects of the alternative on Essential Fish Habitat are the same as described in Alternative 2.

3.6 Soils

3.6.1 Affected Environment

Soils of the units within the Planning Area are composed of residium and colluvium of metasedimentary rock types of the Galice Formation with a few exceptions. These soils were typed by the Natural Resource Conservation Service (NRCS) as belonging to the Speaker, Josephine or Pollard soils series or complexes of the three. They are generally well suited for forest development and management and have over 30 inches of depth and fairly high clay content. The units near the ridgelines were types as being Beekman series which are suited for forest development and have soil depths of up to 20 inches. Three units were typed as belonging to the Cornutt series which is derived from ultramafic rock types including serpententite. This soil is typed as suitable for forest development but due to a higher magnesium content and lower calcium content than that of the metasedimentary soils, the vegetation tends to grow slower. Moderate erosion potential exists for all soils in the project area. Field personnel did not detect any areas within the Planning Area within units that were unstable or had the potential for mass movement.

Soil type is used in the Timber Production Capability Classification (TPCC) to determine relative site productivity/ site class and helps determine the types of silvicultural practices that may be appropriate at specific locations. Information for soils was derived from NRCS Josephine County Soil Surveys and have been ground-verified by BLM personnel.

3.6.2 Environmental Effects

Alternative 1 (No Action)

There would be no soil disturbing activity or compaction on BLM lands through the No Action Alterantive. However, there would be ongoing harvesting and road building on private lands. Harvest would occur at another location under separate NEPA analysis in order to meet harvest commitments identified in the RMP (pp. 3, 17). Selection of this alternative would not constitute a decision to reallocate these lands to non-commodity uses. Future harvesting in this area would not be precluded and could be analyzed under a subsequent EA.

Alternative 2 (Proposed Action)

Activities that are proposed under this alternative would cause soil displacement, compaction on ground that is associated with log landings, cable yarding, tractor logging and road construction. However, implementing Best Management Practices (BMPs) in Appendix D of the RMP should prevent unacceptable degradation of the soil resource. Cable harvesting would result in compaction on about 4% of each harvest unit and about 1% of helicopter-logged units. About 12% of the ground in tractor logging units (using designated skid roads) would experience moderate compaction (Clayton; Dyrness). However, ripping compacted ground with a winged subsoiler would shatter soil compaction by as much as 80% (Froehlich and Miles; Andrus and Froehlich; Davis) and reduce the amount of compaction in tractor yarded units.

The Proposed Action would result in about 2 acres of soil compaction across the Planning Area from construction of temporary and permanent roads. The amount of residual soil compaction after logging, including ripping tractor skid roads and temporary roads, would increase only slightly and be within an acceptable level (RMP/EIS Volume 1, pp. 4-10 to 4-14).

The standard for the Medford District Field Office for acceptable soil productivity losses is stated in the RMP/EIS on pages 4-12 to 4-14 of volume 1. This standard was developed primarily from the research of Froehlich and McNabb (1984) and Wert and Thomas (1981), which indicated that the loss of soil productivity of a given harvest unit was equivalent to approximately one-half of the amount of the area subjected to compaction**.** Loss of soil productivity due to compaction is accounted for in the non-declining timber harvest calculations ((USDI 1992, Volume 1, pp. 4-12).

Sub-soiling tractor skid trails and helicopter landings would increase potential for soil movement but it would not contribute to stream sedimentation because areas to be sub-soiled are not near streams. Movement of soil from cable yarding routes is unlikely because it would be trapped by logging slash or filtered by vegetation on undisturbed ground.

Site preparation would improve planting access. While pile and burn is proposed to be done under cool, moist conditions, there is a possibility that fire could be more intense than desired and reduce but not destroy the organic litter layer, which would be wet at the time of the burn. Site productivity should therefore be maintained in the long term. Bare soil exposed from prescribed burning would not exceed guidelines in the Monitoring Handbook.

There would likely be no adverse incremental addition to other past, present and future compaction and soil displacement at the project level not already considered under the RMP since all new temporary roads and all tractor yarding compaction in tractor units would be sub-soiled. In addition to the sub-soiling, there would be the ongoing natural healing of compaction and soil displacement on BLM surface inside the planning area where past ground-based operations extensively occurred on slopes less than 40 percent. Even though this natural process is very slow, it and the sub-soiling amelioration combined insure that soil productivity at the watershed level would be at least maintained on BLM surface.

Alternative 3 (Hydrology, Wildlife Emphasis)

There would be fewer acres of soil compaction in the Grave -Sunny Valley 6th field watershed under this alternative because all tractor acres would be helicopter- or cable-yarded (Table 2.4).

Additionally, deferring harvest in the transient snow zone of Benjamin Gulch would avoid compacting 0.3 acres of ground in the Grave –Placer 6th field watershed that would have been associated with about 0.2 miles of temporary spur road construction.

Cumulative Effects

Cumulative effects of the action aternatives would be minimal and undetectable at the HUC 5 watershed scale. Watershed area of Grave Creek upstream of the Action Area has a major influence on peak flow and stream sediment within and downstream of the timber sale area. Effects of any of the action Alternatives on fish and other aquatic species within the basin would be immeasurable because BMPs (RMP) and PDFs (EA, Section 2.5) would be used to minimize any adverse effects to the environment.

Although road renovation and decommissioning are important for attempting to restore the natural sediment regime to the watershed, the magnitude of proposed activities is small compared to total HUC 5 acreage so it would not noticeably improve or degrade water quality or the quality of aquatic habitat at the HUC 5 watershed scale. There would be no meaningful change in the HUC 5 road density because of the minor amount of decommissioning and permanent road construction.

Since the proposed cutting units are spread across the entire Planning Area and because proposed harvest acreage is relatively small compared to the HUC 5 watershed area, any hydrologic effects of the proposed action would be undetectable at the HUC 5 watershed scale. Any local hydrologic effect would diminish annually as vegetation recovers in harvest units.

Logging and other ground disturbing activity continue at a steady pace on private lands in and around the Planning Area. Much of the logging occurs with tractor throughout the year. As a result, sediment is generated from tractor yarding and log hauling during wet weather. Much of the riparian habitat along streams in the HUC 5 is under private ownership (47%) and does not support vegetation that is needed for stream and riparian integrity as described in the Northwest Forest Plan. It is expected that activities on private lands would continue to maintain aquatic and riparian habitat in degraded condition. However, stream sedimentation and water temperature increases from operations on private lands may decrease somewhat in the future as lands are logged over for the second time and vegetation re-establishes.

Chapter 4.0 – List of Preparers

The following individuals participated on the interdisciplinary team or were consulted in the preparation of this EA:

Name	Title	Primary Responsibility
Dave Eichamer	Forester	Special Products
Mike Main	Fuels Specialist	Fuels, Air Quality
Michael Bornstein	Wildlife Biologist	Wildlife, T/E Animals
Sarah Bickford	Forester	Silviculture, Logging Systems
Martin Lew	Ecosystem Planner	NEPA
Delbert Longbrake	Engineer	Transportation
Rachel Showalter	Botanist	Botany, Noxious Weeds
Bob Bessey	Fish Biologist	Soils, Hydrology and Fisheries
Katie Wetzel	Recreation Planner	Visual Quality, Recreation
Amy Sobiech	Archaeologist	Cultural Resources, Native American Coordinator

Chapter 5.0 Public Involvement and Consultation

5.1 Public Scoping and Notification

5.1.1 30-day Public Comment Period

The Environmental Assessment will be made available for a 30-day public review period. Notification of the comment period will include: the publication of a legal notice in the Daily Courier, newspaper of Grants Pass, Oregon; and a letter to be mailed to those individuals, organizations, and agencies that have requested to be involved in the environmental planning and decision making processes for proposed timber sales. Comments received in the Glendale Resource Area Office, 200 NE Greenfield Road, Grants Pass, Oregon 97526 on or before the end of the 30-day comment period will be considered in making the final decision for this project.

5.2 Consultation

5.2.1 United States Fish and Wildlife Service

In accordance with regulations pursuant to Section 7 of the Endangered Species Act 1973, as amended, consultation with the USFWS concerning the potential impacts of implementing the Five Rogues Timber Sale Project upon the Northern spotted owl has been completed. The Five Rogues Timber Sale Project was included within the programmatic biological assessment prepared by the interagency Level 1 Team for FY 2004-2008 projects and subsequent programmatic biological opinion issued by USFWS (*USFWS reference* 1-14-03-F-511).

5.2.2 NOAA Fisheries (National Marine Fisheries Service)

Informal consultation with NOAA Fisheries for listed fish species would occur prior to issuing a decision.

5.2.3 State Historical Preservation Office

The State Historical Preservation Office approved the clearance/tracking form for the Five Rogues Timber Sale. The form is contained within the Five Rogues Analysis file.

ACRONYMS AND GLOSSARY

Abbreviations:

BLM	Bureau of Land Management
BMP(s)	Best Management Practices
CT	Commercial Thinning
DBH	Diameter at Breast Height
ESA	Endangered Species Act
GS	Group Select
NEPA	National Environmental Policy Act
PDF	Project Design Feature
RH	Regeneration Harvest
SC	Selection Cut

Air Quality. Refers to standards for various classes of land as designated by the Clean Air Act, P.L. 88-206, Jan. 1978.

Best Management Practices (BMP). Practices determined by the resource professional to be the most effective and practicable means of preventing or reducing the amount of water pollution generated by non-point sources; used to meet water quality goals (See Appendix D in RMP (USDI BLM 1995)).

Canopy. The more or less continuous cover of branches and foliage formed collectively by adjacent trees and other woody species in a forest stand.

Coarse Woody Debris. Portion of trees that have fallen or been cut and left in the woods. Usually refers to pieces at least 20 inches in diameter.

Commercial Thinning. The removal of merchantable trees from most often an even-aged stand to encourage growth of the remaining trees.

Compaction (relative to this EIS). Refers to soil becoming consolidated by the effects of surface pressure often from heavy machinery or vehicle and pedestrian traffic.

Cover. Vegetation used by wildlife for protection from predators, or to mitigate weather conditions, or to reproduce. May also refer to the protection of the soil and the shading provided to herbs and forbs by vegetation.

Cultural Resources. The physical remains of human activity (artifacts, ruins, burial mounds, petroglyphs, etc.) having scientific, prehistoric or social values.

Cumulative Effect. The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can also result from individually minor, but collectively significant actions taking place over a period of time.

Diameter at Breast Height (dbh). The diameter of a tree 4.5 feet above the ground on the

uphill side of the tree.

Edge. Where different plant communities meet, or where variations in successional stage or vegetation conditions within the plant community come together.

Effects (or Impacts). Environmental consequences as a result of a proposed action. Effects provide the scientific and analytical basis for comparison of alternatives. Effects might be either direct (caused by the action and occur at the same time and place) or indirect (occurring later in time or at a different location, but are reasonably foreseeable or cumulative results of the action).

Effects and impacts as used in this EA are synonymous. Effects include ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic quality, historic, cultural, economic, social, or healthy effects, whether direct, indirect, or cumulative. Effects might also include those resulting from actions that might have both beneficial and detrimental effects, even if on the balance it appears that the effects would be beneficial.

Endangered Species. Any species defined through the Endangered Species Act of 1973 as amended, as being in danger of extinction throughout all or a significant portion of its range and published in the Federal Register.

Environmental Assessment (EA). A statement of the environmental effects of a proposed action and alternatives to it. It is required for major federal actions under Section 102 of NEPA and is released to the public and other agencies for comment and review. It is a formal document that must follow the requirements of NEPA, CEQ guidelines, and directives of the agency responsible for the project proposal.

Erosion. Detachment or movement of soil or rock fragments by water, wind, ice, or gravity. Accelerated erosion is more rapid than normal, natural, or geologic erosion, primarily resulting from the activities of people, animals, or natural catastrophes.

Floodplain. The lowland and relatively flat area adjoining inland and coastal waters, including, at a minimum, areas that are subject to a one percent or greater chance of flooding in any given year.

Forage. All browse and non-woody plants that are available to livestock or game animals and used for grazing or harvested for feeding.

Forest Health. The ability of forest ecosystems to remain productive, resilient, and stable over time and to withstand the effects of periodic natural or human caused stresses such as drought, insect attack, disease, climatic change, flood, resource management practices and resource demands.

Forb. Any herb other than grass.

Fuels. Combustible wildland vegetative materials present in the forest which potentially contribute to a significant fire hazard.

Fuels Management. Manipulation or reduction of fuels to meet Forest protection and management objectives while preserving and enhancing environmental quality.

Habitat Type. (Vegetative). An aggregation of all land areas potentially capable of producing similar plant communities at climax.

Hardwoods. A conventional term for broadleaf trees and their wood products.

Impacts. A spatial or temporal change in the environment caused by human activity**.** See effects.

Indirect Effects. Secondary effects which occur in locations other than the initial action or significantly later in time.

Intermittent Stream. Any nonpermanent flowing drainage feature having a definable channel and evidence of scour or deposition. This includes what are sometimes referred to as ephemeral streams if they meet these two criteria.

Mitigation. Mitigation includes (1) avoiding the impact altogether by not taking a certain action or parts of an action; (2) minimizing impacts by limiting the degree or magnitude of the action and its implementation; (3) rectifying the impact by repairing, rehabilitating, or restoring the affected environment; (4) reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and (5) compensating for the impact by replacing or providing substitute resources or environments.

National Environmental Policy Act of 1969 (NEPA). This law requires the preparation of environmental impact statements for every major Federal Action which causes a significant effect on the quality of the human environment.

No-Action Alternative. The No-Action alternative is required by regulations implementing the National Environmental Policy Act (NEPA) (40 CFR 1502.14). The No-Action alternative provides a baseline for estimating the effects of other alternatives. When a proposed activity is

being evaluated, the No-Action alternative discusses conditions under which current management direction would continue unchanged.

Non-attainment. Failure of a geographical area to attain or maintain compliance with ambient air quality standards.

Noxious Weeds. Rapidly spreading plants that can cause a variety of major ecological or economic impacts to both agriculture and wildland.

Overstory. That portion of trees which form the uppermost layer in a forest stand which consists of more than one distinct layer (canopy).

Perennial Streams. Streams that flow continuously throughout the year.

Prescribed Burning. The intentional application of fire to wildland fuels in either their natural or altered state. Burning is conducted under such conditions as to allow the fire to be confined to a predetermined area and to produce an intensity of heat and rate of spread required to meet planned objectives (e.g., silvicultural, wildlife management, reduction of fuel hazard, etc.).

Prescribed Fire. A preplanned wildland fire burning under specified conditions to accomplish specific planned objectives. It could result from either a planned or unplanned ignition.

Prescription. Management practices selected and scheduled for application on a designated area to attain specific goals and objectives.

Regeneration. The renewal of a tree crop, whether by natural or artificial means. This term might also refer to the crop itself(seedlings, saplings).

Resource Management Plan (RMP). A land use plan prepared by the BLM under current regulations in accordance with the Federal Land Policy and Management Act. (See USDI, BLM 1995).

Riparian Reserves. Designated riparian areas found outside Late-Successional reserves.

Riparian Zone/Habitat. Those terrestrial areas where the vegetation complex and microclimate conditions are products of the combined presence and influence of perennial and/or intermittent water, associated high water tables and soils which exhibit some wetness characteristics. Normally used to refer to the zone within which plants grow rooted in the water table of these rivers, streams, lakes, ponds, reservoirs, springs, marshes, seeps, bogs and wet meadows.

Seral Stages. The series of relatively transitory plant communities that develop during ecological succession from bare ground to the climax stage. Generally there are five stages recognized: early-seral, mid-seral, late-seral, mature-seral, and old-growth.

Slash. The residue on the ground following felling and other silvicultural operations and/or accumulating there as a result of a storm, fire girdling, or poisoning of trees.

Snag. A standing dead tree usually without merchantable value for timber products, but having characteristics of benefit to cavity nesting wildlife species.

Soil Compaction. An increase in bulk density (weight per unit volume) and a decrease in soil porosity resulting from applied loads, vibration, or pressure.

Stand. A community of trees or other vegetation uniform in composition, physiognomy, spatial arrangement, or condition to be distinguishable from adjacent communities.

Threatened Species. Any species of plant or animal which is likely to become endangered within the foreseeable future throughout all or a significant portion of its range, and which has been designated in the Federal Register as such. In addition, some states have declared certain species in their jurisdiction as threatened or endangered.

Understory. Vegetation (trees or shrubs) growing under the canopy formed by taller trees.

Water Quality. The chemical, physical and biological characteristics of water.

Watershed. Entire area that contributes water to a drainage system or stream.

Wildfire. Any wildfire not designated and managed as a prescribed fire with an approved prescription.

Yarding. The act or process of moving logs to a landing.

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APPENDIX 1 ALTERNATIVE DEVELOPMENT SUMMARY

Environmental Assessment Number OR-118-05-007

Pursuant to Section 102 (2) (E) of NEPA (National Environmental Policy Act of 1969, as amended), Federal agencies shall "Study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources." The CEQ (Council on Environmental Quality) regulations for implementing the procedural provisions of NEPA states, alternatives should be "reasonable" and "provide a clear basis for choice" (40 CFR 1502.14).

In light of the direction contained in both NEPA and the CEQ Regulations, the following questions were used to 1/ identify the alternatives to be analyzed in detail in this environmental assessment that are in addition to the "proposed action" and "no action" alternatives, and 2/ document the rationale for eliminating alternatives from detailed study.

1. **Are there any unresolved conflicts concerning alternative uses of available resources?** *If yes, document and go to Question #2. If no, document rationale and stop evaluation*

Yes. There has been considerable timber harvest activity in these three HUC 6 watersheds in the recent past (Table 3-4); most of it on private lands. Some of it has been in the transient snow zone (TSZ) lands above approximately 2500 feet elevation. Six to 46 percent of each HUC 6 watershed is in the transient snow zone (Table 3-6), generally above 2500 feet elevation. Watersheds with open forest canopy in the transient snow zone are more susceptible to accelerated runoff and higher peak flows from rain-on-snow events than are same size watersheds at lower elevation where precipitation usually falls as rain, rather than snow. Hydrologic risk factors such as percent of each HUC 6 in TSZ, percent of acreage less than 30 years of age following most recent disturbance (generally wildfire or timber harvest), as well as road density and stream channel condition are used to evaluate the risk of rain-on-snow events. Rain-on-snow events could potentially destabilize stream channels and degrade habitat for fish and other aquatic species. The two areas identified at risk are Benjamin Gulch and Brushy Gulch drainages.

A key aspect of late-successional habitat value concerns the distribution of remaining habitat within the Grave Creek watershed and the Planning Area. Many of the late-successional stands are highly fragmented and frequently isolated from other stands both because of past logging practices and checkerboard ownership patterns (USDI 1999, p. 51). In the Planning Area, there is one large block of late-successional habitat, the approximately 1,000 acre Burgess Gulch drainage, and a second small portion of a large 2,500 acre area near Reuben Creek. Within the Grave Creek watershed, late-successional habitat is concentrated in the eastern and western thirds. The center of the watershed, the Planning Area, is characterized by more agricultural and residential areas, along with the towns of Sunny Valley and Wolf Creek, and Interstate 5, and is dominated by the wide floodplain of Grave Creek. As a result, conditions in the Planning Area act as a barrier to east-west connectivity of late-successional affiliated species.

2. **What alternatives should be considered that would lessen or eliminate the "unresolved conflicts concerning alternative uses of available resources"?** *List alternatives and go to Question #3. If no alternative is identified other than the "no action" alternative, document and stop evaluation.*

   An alternative that emphasizes hydrologic and wildlife concerns could be considered. This alternative would entail deferring the following units: 5S-3, 6S-5, 15S-4, 15S-6, 15S-7, 29-1, 32-1, 32-2, and 21 acres of 5S-1 .

3. **Of those alternatives identified in Question #2, are there reasonable alternatives for wholly or partially satisfying the need for the proposed action?** *If so, briefly describe alternatives and go to question #4. If no, document rationale and stop evaluation.*

   Yes, the alternative identified in Question #2 would partially meet the purpose and need of providing timber to the local economy but would not meet the Oregon and California Revested Lands Sustained Yield Management Act (O & C Act) which requires the Secretary of the Interior to manage O & C lands for permanent forest production in accord with sustained yield principles (RMP, p.17).

4. **Of those alternatives identified in Question #3, will such alternatives have meaningful differences in environmental effects?** *If so, seek line officer approval to carry alternatives forward for detailed analysis in the environmental assessment. If no, document rationale and stop evaluation.*

   Yes. See Chapter 3 of the EA (impact analysis for Alternative 3)

APPENDIX 2 ENVIRONMENTAL ELEMENTS

Environmental Assessment Number OR-118-05-007

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

Table 1. Critical Elements of the Environment. This table lists the critical elements of the human environment (BLM Handbook 1790-1) which are subject to requirements specified in statute, regulation, or executive order and the interdisciplinary teams predicted environmental impact per element if the alternatives described in Chapter 2 of the Environmental Assessment were implemented.

Critical Element of the Human Environment	**Status** **1/ Not Present** **2/ Not Affected** **3/ Affected**	**Interdisciplinary Team Remarks** **1/ If not affected, why?** **2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in Appendix D of the RMP to reduce or avoid environmental harm**
Air Quality (Clean Air Act)	Not Affected	The Planning Area is not located within a Class I designated airshed or non-attainment area. Dust created from vehicle traffic on gravel or natural-surfaced roads, road construction and logging operations would be localized and of short duration. Activity fuels would be burned in accordance with the *Oregon State Implementation Plan*, *Oregon Smoke Management Plan and Visibility Improvement Plan.* The impact of smoke on air quality is expected to be localized and of short duration. Particulate matter would not be of a magnitude to harm human health, affect the environment, or result in property damage. As such, the Proposed Action is consistent with the provisions of the Federal Clean Air Act.
Areas of Critical Environmental Concern	Not Present	There are no Areas of Critical Environmental Concern located within the Planning area.
Cultural, Historic, Paleontological	Not Affected	Cultural resource surveys were completed for the project in winter of 2004. Guidelines for the survey followed compliance procedures for cultural resource survey set forth by Section 106 NHPA. Surveys were conducted using Oregon SHPO standards protocol. Three new cultural resource sites were recorded for this project. One prehistoric isolate was also recorded. All newly recorded sites are located in timber harvest units and would be protected with a no cut buffer. As such, cultural resources will not be affected. If additional cultural resources are located during the implementation of an action, the project may be redesigned to protect the values present or until an evaluation can occur based on recommendations from the Glendale Resource Area archaeologist.
Energy (Executive Order 13212)	Not Affected	There is an energy resource, an underground gas pipeline, located in the Planning area. The Proposed Action will have no effect on energy development, production, supply and/or distribution
Environmental Justice (Executive Order 12898)	Not Affected	The Proposed Action is not anticipated to have disproportionately high and adverse human health or environmental effects on minority populations and low-income populations.
Prime or Unique Farm Lands	Not Present	

Table 1. Critical Elements of the Environment. This table lists the critical elements of the human environment (BLM Handbook 1790-1) which are subject to requirements specified in statute, regulation, or executive order and the interdisciplinary teams predicted environmental impact per element if the alternatives described in Chapter 2 of the Environmental Assessment were implemented.		
Critical Element of the Human Environment	**Status** **1/ Not Present** **2/ Not Affected** **3/ Affected**	**Interdisciplinary Team Remarks** **1/ If not affected, why?** **2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in Appendix D of the RMP to reduce or avoid environmental harm**
Flood Plains (Executive Order 11988)	Not Affected	The Proposed Action does not involve occupancy and modification of floodplains, and will not increase the risk of flood loss. As such, the Proposed Action is consistent with Executive Order 11988.
Hazardous or Solid Wastes	Not Affected	There would be no environmental effects associated with this element due to the implementation of the Best Management Practices contained in the Medford RMP and the terms/conditions of the timber sale contract. Failure to comply with the terms and conditions of the timber sale contract can result in violations, suspension or cancellation of the contract.
Invasive, Nonnative Species (Executive Order 13112)	Not Affected	Units within the Five Rogues Planning Area were surveyed for noxious weeds in the spring of 2003. Although the Planning Area is known to have invasive weeds along many roadsides, only three noxious weed species, Meadow knapweed (*Centaurea pratensis)* (2 sections), Scotchbroom *(Cytisus scoparius)* (1 section), and Himalayan blackberry (*Rubus discolor*) (1 section), were found within proposed harvest units. PDFs have been established to mitigate the potential spread of weeds, and include such measures as washing equipment prior to moving it on-site, operating vehicles/equipment in the dry season, and seeding newly created openings with native grass/forb mix so they can become established before the invasive weeds have a chance to germinate. Additionally, in the long term, after canopies have filled in and vehicular traffic has subsided to normal levels, weed infestations are likely to level off. In cases where canopy cover is re-established, weed populations are expected to decline, as the amount of light reaching the plants diminishes. The effects of the proposal on the spread noxious weeds is negligible, for a variety of reasons. First, noxious weeds were only found to cover 0.065 acres, or 0.00009% of the units. This suggests that the possibility of infestations reaching uncontrollable levels is not probable. Second, sites reported in the Planning Area have been reported, and will be eradicated in the near future whether or not the proposal goes forward. The Medford District BLM has an ongoing weed program, which is utilized to eradicate known noxious weed populations reported by BLM contractors, botanists, and other field-going personnel. Third, Project Design Features (PDFs) have been established to minimalize the potential of spreading noxious weed seed from outside/adjacent sources. Monitoring would occur in conjunction with project implementation, in an effort to ensure compliance with the PDFs. .
Native American Religious Concerns	Not Present	

Table 1. Critical Elements of the Environment. This table lists the critical elements of the human environment (BLM Handbook 1790-1) which are subject to requirements specified in statute, regulation, or executive order and the interdisciplinary teams predicted environmental impact per element if the alternatives described in Chapter 2 of the Environmental Assessment were implemented.

Critical Element of the Human Environment	**Status** **1/ Not Present** **2/ Not Affected** **3/ Affected**	**Interdisciplinary Team Remarks** **1/ If not affected, why?** **2/ If affected, develop cause/effect statement, unit of measure to describe environmental impacts, and if applicable, design features not already identified in Appendix D of the RMP to reduce or avoid environmental harm**
T/E (Threatened or Endangered) Fish Species or Habitat	Affected (Coho salmon)	Affected: The Proposed action may affect key elements of stream habitat (riparian reserves, stream sediment, stream channel stability, and habitat connectivity) which may have an adverse impact on Southern Oregon/Northern California coho salmon (ESA-Threatened). The unit of measure is a narrative on each key element of stream habitat. *Refer to Section 3.5 of the EA for a discussion of the affected environment and environmental effects of the alternatives related to this element of the environment.*
T/E (Threatened or Endangered) Plant Species or Habitat	Not Present	Of the four federally listed plants on the Medford District (*Fritillaria gentneri, Limnanthes flocossa* ssp. *grandiflora, Arabis macdonaldiana,* and *Lomatium cookie)* only *Fritillaria gentneri* has a range and habitat which extends into the Glendale Resource Area. Although the Planning Area is within the range and habitat of *F. gentneri*, as determined by the US Fish and Wildlife Service, vascular plant surveys were conducted in the spring of 2004, and no *Fritillaria gentneri* populations were found.
T/E (Threatened or Endangered) Wildlife Species, Habitat and/or Designated Critical Habitat	Affected (NSO - species and its habitat,; Fisher - habitat) Not Affected (NSO critical habitat) Not Present (MAMU, including habitat; Bald Eagle)	Affected: The proposed action would impact suitable habitat for the NSO (northern spotted owl), Threatened, and fisher (Candidate). The unit of measure is the acres of suitable habitat degraded or removed. Design features are those contained within the Terms and Conditions of the Biological Opinion #1-14-03-F-511 such as seasonal and daily time restrictions. *Refer to Section 3.4 of the EA for a discussion of the affected environment and environmental effects of the alternatives related to this element of the environment.* Not Affected: There is NSO critical habitat within the Planning Area; however there are no treatments proposed within NSO critical habitat. Not Present: Marbled murrelets are not present within the Planning Area. The proposed action would not occur within designated marbled murrelet critical habitat. The bald eagle is not present in the project area.
Water Quality (Surface and Ground)	Not Affected (water temperature)	The Oregon Department of Environmental Quality has listed Grave Creek, Wolf Creek and Coyote Creek within the project area as water quality limited for water temperature during summer. There are no proposed harvest units adjacent to any of these streams. As such, the Proposed Action would not alter water temperature. The overall effects of the Proposed Action on water quality are expected to be neutral in the short-term and long-term, and the State of Oregon water quality standards would not be exceeded.
Wetlands (Executive Order 11990)	Not Present	The proposed action would not result in the destruction, loss or degradation of any wetland. As such, the proposed action is consistent with Executive Order 11990.
Wild and Scenic Rivers	Not Present	There are no Wild and Scenic Rivers located within the Planning Area.
Wilderness	Not Present	There are no Wildernesses located within the Planning Area.

Table 2. Other Elements of the Environment. This table lists other elements of the environment which are subject to requirements specified in law, regulation, policy, or management direction and the interdisciplinary teams predicted environmental impact per element if the alternatives described in Chapter 2 of the Environmental Assessment were implemented.		
Other Elements of the Environment	**Status** **1/ Not Present** **2/ Not Affected** **3/ Affected**	**Interdisciplinary Team Remarks** **1/ If not affected, why?** **2/ If affected, develop cause/effect statement, unit of measure, and if applicable, design features not already identified in Appendix D of the RMP to reduce or avoid environmental harm**
Essential Fish Habitat (Magnuson-Stevens Fisheries Conservation and Management Act)	Affected (Coho salmon and fall-run Chinook salmon) Not Present (spring-run Chinook salmon)	Affected: The Proposed Action may affect EFH (Essential Fish Habitat) for Southern Oregon/Northern California coho salmon and Southern Oregon Coast/California Coast fall-run Chinook salmon. The unit of measure is a narrative that describes whether the action would result in adverse effects to EFH. *Refer to Section 3.5 of the EA for a discussion of the affected environment and environmental effects of the alternatives related to this element of the environment.* Not Present: Southern Oregon Coast/California Coast spring-run Chinook salmon, which spawns in the upper Rogue River basin.
Fire Hazard/Risk	Affected	The proposed harvesting would create activity fuels which would increase fire risk in the short-term (until the activity fuels are treated). The unit of measure is a narrative. *Refer to Section* 3.2 *of the EA for a discussion of the affected environment and environmental effects of the alternatives related to this element of the environment.*
Recreation	Affected (visitor use of London Peak trail) Not Affected (all other recreation in the Planning Area)	Temporary road closures on the 33-6-26 road, and traffic delays on 34-6-2, 34-6-1 will affect recreationist to these areas. Project Design Features have been developed for this mitigation and are located in Section 2.2.12. The unit of measure for this environmental element is recreation occurrences. *Refer to Section 3.3 The affects on this unit of measure is addressed in Chapter 3 EA for a discussion of the affected environment and environmental effects of the alternatives related to this element of the environment.*
Rural Interface Areas	Not Affected	Rural residents abide in the Planning Area would experience short-term noise, dust, and traffic congestion due to logging operations. These types of activities are common because of management practices occurring on private and other public lands. Concerns such as dust abatement, traffic congestion, and helicopter flight noise will be mitigated through the application of Project Design Features addressed in Chapter 2 of this document.
Special Areas (not including ACEC)	Not Present	There are no Special Areas located within the Planning Area.

Table 2. Other Elements of the Environment. This table lists other elements of the environment which are subject to requirements specified in law, regulation, policy, or management direction and the interdisciplinary teams predicted environmental impact per element if the alternatives described in Chapter 2 of the Environmental Assessment were implemented.		
Other Elements of the Environment	**Status** **1/ Not Present** **2/ Not Affected** **3/ Affected**	**Interdisciplinary Team Remarks** **1/ If not affected, why?** **2/ If affected, develop cause/effect statement, unit of measure, and if applicable, design features not already identified in Appendix D of the RMP to reduce or avoid environmental harm**
Special Status Species (not including T/E): Fish Species/Habitat	Affected (Klamath Mountain Province summer-run and winter-run/winter-run steelhead trout and Southern Oregon Coast/ California Coast fall-run Chinook salmon) Not present (spring-run Chinook salmon)	Affected: The Proposed Action may contribute sediment to streams and affect Klamath Mountain Province summer-run and winter-run steelhead trout, both Bureau Assessment species, as well as Southern Oregon Coast/California Coast fall-run Chinook salmon, a Bureau Sensitive species. The unit of measure is whether the action would contribute to the need to list under the Endangered Species Act. *Refer to Section 3.5 of the EA for a discussion of the affected environment and environmental effects of the alternatives related to this element of the environment.* Not present: Southern Oregon Coast/California Coast spring-run Chinook salmon, a Bureau Assessment species, which spawns in the upper Rogue River basin. Pacific lamprey and Southern Oregon/California coastal cutthroat trout, Bureau Tracking species, are also found within the Planning Area. Bureau Tracking species are not considered special status species for management purposes. These species do not require management or mitigation (IM OR-2003-054).

Table 2. Other Elements of the Environment. This table lists other elements of the environment which are subject to requirements specified in law, regulation, policy, or management direction and the interdisciplinary teams predicted environmental impact per element if the alternatives described in Chapter 2 of the Environmental Assessment were implemented.		
Other Elements of the Environment	**Status** **1/ Not Present** **2/ Not Affected** **3/ Affected**	**Interdisciplinary Team Remarks** **1/ If not affected, why?** **2/ If affected, develop cause/effect statement, unit of measure, and if applicable, design features not already identified in Appendix D of the RMP to reduce or avoid environmental harm**
Special Status Species (not including T/E): Plant Species/Habitat	Not Affected	Vascular plant surveys were conducted in the spring of 2003. Surveys revealed sensitive species Cypripedium fasciculatum and Camassia howellii, assessment species Delphinium nudicaule and Silene hookeri var. bolanderi), and tracking Allium bolanderi var. mirabile and Cypripedium montanum). Nonvascular surveys, completed in winter 2004, resulted in nonvascular plant findings of assessment species sites FUMU and CRLA and Tracking species (Hedwigia detonsa). Bureau Sensitive and Assessment species will be protected by buffers (see Section 2.2.6). Bureau Tracking species do not require mitigation (IM OR-2003-054) and will not receive buffers. The Planning Area not surveyed for fungi, as pre-disturbance surveys for Special Status fungi are not practical, nor required per BLM – Information Bulletin No. OR 2004-121, which states "If project surveys for a species were not practical under the Survey and Manage standards and guidelines (most Category B and D species), or a species'status is undetermined (Category E and F species), then surveys will not be practical or expected to occur under the Special Status/Sensitive Species policies either (USDA FS and USDI BLM, 2004, p.3)." Current special status fungi were formerly in the aforementioned S&M categories which did not consider surveys practical, and are therefore exempt from survey requirements. District wide, the Medford BLM has ten Bureau Sensitive (BSO) fungi species; seven are suspected to occur here, while the remaining three have been documented. Of the three documented species, only one, Phaeocollybia olivacea, has been found in the Glendale Resource Area, approximately 2.5 air miles away from the project area. Based on the outcome of utilizing the 'Likelihood of Occurrence Key' provided from the BLM Oregon State Office, there is a "low likelihood of occurrence and low risk to species viability or trend toward listing," for sensitive fungi species potentially located in the project area. Based on the above information, the likelihood of a Bureau Sensitive fungi species in this project area is very low; the likelihood of a sensitive fungi occurring within a single unit(s) encompassed in the project area is even lower. The likelihood of contributing toward the need to list is not probable.
Soil (productivity, erodibility, mass wasting, etc.)	Affected	The Proposed Action will result in soil compaction/disturbance that may reduce soil productivity. The unit of measure is a narrative description of soil compaction/disturbance and productivity. *Refer to Section 3.5 of the EA for a discussion of the affected environment and environmental effects of the alternatives related to this element of the environment*

Table 2. Other Elements of the Environment. This table lists other elements of the environment which are subject to requirements specified in law, regulation, policy, or management direction and the interdisciplinary teams predicted environmental impact per element if the alternatives described in Chapter 2 of the Environmental Assessment were implemented.		
Other Elements of the Environment	**Status** **1/ Not Present** **2/ Not Affected** **3/ Affected**	**Interdisciplinary Team Remarks** **1/ If not affected, why?** **2/ If affected, develop cause/effect statement, unit of measure, and if applicable, design features not already identified in Appendix D of the RMP to reduce or avoid environmental harm**
Visual Resources	Not Affected	The Planning area is located within VRM (Visual Resource Management) Class I-IV category lands. These VRM categories allow for varying amounts of modifications to the existing character of the landscape. Additionally, mange rural interface lands using visual resource management Class III standards unless otherwise classified as Class I or II (p. 88). The Proposed Action is consistent with these visual resource management objectives as stated in the Medford District Resource Management Plan (page 70), and mitigated through the application of Project Design Features addressed within this document. Visual Contrast Rating sheets have been created and are located within the Project File Record.
Late-Successional Forest	Proposed action is in compliance with the 15% Standard and Guideline	Federal ownership of late-successional forest is approximately 58% (USDI 1999) of the entire Grave Creek watershed. The Northwest Forest Plan standards and guidelines state that at least 15% of fifth field watersheds should be managed to retain late-successional patches (ROD, C-44). Harvest from other recent timber sales (King Wolf, Coyote Pete) would remove approximately 107 acres of late-successional forest. The cumulative removal of late-successional forest from the proposed 5 Rogues Timber Sale, and these recent timber sales, is approximately 1% of late-successional lands within the Grave Creek watershed. As such, the proposed action is in compliance with the 15% Standard and Guideline.

Table 2. Other Elements of the Environment. This table lists other elements of the environment which are subject to requirements specified in law, regulation, policy, or management direction and the interdisciplinary teams predicted environmental impact per element if the alternatives described in Chapter 2 of the Environmental Assessment were implemented.		
Other Elements of the Environment	**Status** **1/ Not Present** **2/ Not Affected** **3/ Affected**	**Interdisciplinary Team Remarks** **1/ If not affected, why?** **2/ If affected, develop cause/effect statement, unit of measure, and if applicable, design features not already identified in Appendix D of the RMP to reduce or avoid environmental harm**
Special Status Species (not including T/E): Wildlife Species/Habitat	Not Affected (Northern Goshawk, Townsend's big-eared bat, and Fringed myotis) Not Present (All other species)	Not affected: **Bureau Sensitive** Northwestern pond turtle – This species is not found in units but resides in streams. It is expected that pond turtles will not be affected since treatments will occur outside of riparian reserves, and it is thus expected little or no sediment will reach the streams. Oregon shoulderband (snail) – This snail is likely to occur in Planning Area. Typical habitat is rock talus, rock outcrop, and grass-hardwood meadow, which is not found in proposed units. Red-necked grebe – This species is not found in units, but resides in ponds. No treatments occur near any known ponds, and thus it is expected there will be no impacts to red-necked grebes Townsend's big-eared bat (Bureau Sensitive) – There is one known colony of Townsend's big-eared bats in the project area. Project design features, including buffers around the known adit sites, are expected to avoid project impacts. Northern goshawk - There are no known active nest locations in the Planning Area. **Bureau Assessment** Foothill yellow-legged frog – This species is not found in units but resides in streams. It is expected that foothill yellow-legged frogs will not be affected since treatments will occur outside of riparian reserves Pacific pallid bat – This species is likely to occur in the Planning Area. Its typical habitat of rock outcrops and cliffs is not found in units, and harvest treatments are not expected to affect this habitat. Fringed myotis - This species utilizes old growth habitat. There are no known sites. This project is expected to maintain the viability level. Not present: **Bureau Sensitive** – American peregrine falcon, black-backed woodpecker, flammulated owl, Lewis' woodpecker, three-toed woodpecker, white-headed woodpecker, Siskiyou short-horned grasshopper, Chase sideband (snail), Oregon shoulderband (snail), Siskiyou hesperian, and travelling sideband (snail). **Bureau Assessment** - white-tailed kite. Consistent with Bureau policy (IM OR-2003-054) Bureau tracking species are not considered a special status species for management purposes.
Port-Orford-cedar	Not Present	

*Bureau Special Status Species Policy for sensitive species requires that the BLM protect, manage, and conserve those species and their habitats such that any Bureau action would not contribute to the need to list any of these species. Bureau Assessment species, which are not eligible for federal listing status like sensitive species, but are of a concern in Oregon might, at a minimum, need protection or mitigation in BLM activities. Bureau Tracking species are not considered special status species for management purposes. These species do not require management or mitigation (IM OR-2003-054).

APPENDIX 3 PATHWAY INDICATORS

CHECKLIST FOR DOCUMENTING ENVIRONMENTAL BASELINE AND EFFECTS OF PROPOSED ACTION(S) ON RELEVANT INDICATORS

Project Name: Five Rogues Timber Sale (Hydrology/Soils**)**

6th Field HUC or Project Scale: Grave Creek-Sunny Valley

Date: 5/26/05

Preparer(s): Bob Bessey (Fish) Loren Wittenberg

Physiographic Province: Klamath/Siskiyou

Resource Area, Medford BLM
Glendale Resource Area

		Current Condition			Alternative 2 & 3			
PATHWAY INDICATORS		**Properly Functioning[1]**	**At Risk[1]**	***Not* Properly Functioning[1]**	**Restore[2]**	**Maintain[2]**	**D egrade[2]**	
Water Qual.	Temperature			BLM		X		
	Sediment			AM		X		
	Chem. Contam./ Nutrient Load		PJ;WA			X		
	Physical Barriers	WA;ODFW				X		
Habitat Elements	Substrate			AM		X		
	Large Woody Debris			ODFW		X		
	Pool Frequency		ODFW			X		
	Pool Quality			ODFW		X		
	Off-Channel Habitat		ODFW;PJ			X		
	Refugia			PJ;WA		X		
Chan. Cond. & Dyna.	Width/Depth Ratio		ODFW			X		
	Streambank Condition		ODFW			X		
	Floodplain Connectivity		PJ			X		
Flow/Hydro	Peak/Base Flows		WA			X		
	Drainage Network Increase			WA		X		
Wshed Condition	Road Density and Location			WA		X		
	Disturbance History		WA			X		
	Landslide Rates	WA;PJ				X		
	Riparian Reserve			WA		X		

1 These 3 categories of function ("properly functioning," "at risk," "not properly functioning") are defined for each indicator in the "Matrix of Factors and Indicators" for each physiographic province as agreed to by the ESA Level 1 Teams.

2 The effects of the action are based on which way the project is likely to move a relevant indicator. However, no changes in baseline conditions are expected. For the purposes of this checklist, “restore” means to move an “at risk” indicator toward “properly functioning” or a “not properly functioning” indicator toward “at risk” or “properly functioning.” “Maintain” means that the function of an indicator does not change. “Degrade” means to move the function of an indicator for the worse (i.e. it applies to all indicators regardless of functional level). In some cases, a “not properly functioning” indicator may be further worsened, and this should be noted.

Codes:

BLM Water temperature data
ODFW: ODFW stream habitat survey data
PJ: Professional judgment
WA: Grave Creek Watershed Analysis
AM: Aquatic macroinvertebrate survey and report.

Project Name: Five Rogues Timber Sale (Hydrology/Soils**)**

6th Field HUC or Project Scale: Grave Creek-Placer

Date: 5/26/05

Preparer(s): Bob Bessey (Fish) Loren Wittenberg

Physiographic Province: Klamath/Siskiyou

Resource Area, Medford BLM
Glendale Resource Area

	PATHWAY INDICATORS	Current Condition: ENVIRONMENTAL BASELINE			Alternative 2 & 3: EFFECTS OF THE ACTION(S)[2]			
		Properly Functioning[1]	**At Risk[1]**	***Not* Properly Functioning[1]**	**Restore[2]**	**Maintain[2]**	**D egrade[2]**	
Water Qual.	Temperature			BLM		X		
	Sediment			AM		X		
	Chem. Contam./ Nutrient Load		PJ;WA			X		
	Physical Barriers	WA;ODFW				X		
Habitat Elements	Substrate			AM		X		
	Large Woody Debris			ODFW		X		
	Pool Frequency		ODFW			X		
	Pool Quality			ODFW		X		
	Off-Channel Habitat		ODFW;PJ			X		
	Refugia			PJ;WA		X		
Chan. Cond. & Dyna.	Width/Depth Ratio		ODFW			X		
	Streambank Condition		ODFW			X		
	Floodplain Connectivity		PJ			X		
Flow/Hydro	Peak/Base Flows		WA			X		
	Drainage Network Increase			WA		X		
Wshed Condition	Road Density and Location			WA		X		
	Disturbance History		WA			X		
	Landslide Rates	WA;PJ				X		
	Riparian Reserve			WA		X		

Project Name: **6th Field HUC or Project Scale**: **Date:** **Preparer(s):** Bob Bessey (Fish)

Five Rogues Timber Sale Wolf Creek 5/26/05 Loren Wittenberg (Hydrology/Soils)

Physiographic Province: Klamath/Siskiyou **Resource Area, Medford BLM** Glendale Resource Area

		Current Condition			Alternative 2 & 3			
PATHWAY INDICATORS		**ENVIRONMENTAL BASELINE**			**EFFECTS OF THE ACTION(S)[2]**			
		Properly Functioning[1]	**At Risk[1]**	***Not* Properly Functioning[1]**	**Restore[2]**	**Maintain[2]**	**D egrade[2]**	
Water Qual.	Temperature		WA			X		
	Sediment			AM		X		
	Chem. Contam./ Nutrient Load	PJ				X		
	Physical Barriers		WA;ODFW			X		
Habitat Elements	Substrate			AM		X		
	Large Woody Debris			ODFW		X		
	Pool Frequency		ODFW			X		
	Pool Quality			ODFW		X		
	Off-Channel Habitat		ODFW;PJ			X		
	Refugia			PJ;WA		X		
Chan. Cond. & Dyna.	Width/Depth Ratio	ODFW				X		
	Streambank Condition		ODFW			X		
	Floodplain Connectivity	PJ				X		
Flow/Hydro	Peak/Base Flows		WA			X		
	Drainage Network Increase			WA		X		
Wshed Condition	Road Density and Location			WA		X		
	Disturbance History		WA			X		
	Landslide Rates	WA;PJ				X		
	Riparian Reserve			WA		X		

Project Name: Five Rogues Timber Sale (Hydrology/Soils**)**

6th Field HUC or Project Scale: Grave Creek-Placer

Date: 5/26/05

Preparer(s): Bob Bessey (Fish) Loren Wittenberg

Physiographic Province: Klamath/Siskiyou

Resource Area, Medford BLM
Glendale Resource Area

		Current Condition			Alternative 2 & 3			
PATHWAY INDICATORS		**ENVIRONMENTAL BASELINE**			**EFFECTS OF THE ACTION(S)[2]**			
		Properly Functioning[1]	**At Risk[1]**	***Not* Properly Functioning[1]**	**Restore[2]**	**Maintain[2]**	**D egrade[2]**	
Water Qual.	Temperature			BLM		X		
	Sediment			AM		X		
	Chem. Contam./ Nutrient Load		PJ;WA			X		
	Physical Barriers	WA;ODFW				X		
Habitat Elements	Substrate			AM		X		
	Large Woody Debris			ODFW		X		
	Pool Frequency		ODFW			X		
	Pool Quality			ODFW		X		
	Off-Channel Habitat		ODFW;PJ			X		
	Refugia			PJ;WA		X		
Chan. Cond. & Dyna.	Width/Depth Ratio		ODFW			X		
	Streambank Condition		ODFW			X		
	Floodplain Connectivity		PJ			X		
Flow/Hydro	Peak/Base Flows		WA			X		
	Drainage Network Increase			WA		X		
Wshed Condition	Road Density and Location			WA		X		
	Disturbance History		WA			X		
	Landslide Rates	WA;PJ				X		
	Riparian Reserve			WA		X		

Project Name: Five Rogues Timber Sale

6th Field HUC or Project Scale: Wolf Creek

Date: 5/26/05

Preparer(s): Bob Bessey (Fish) Loren Wittenberg (Hydrology/Soils)

Physiographic Province: Klamath/Siskiyou

Resource Area, Medford BLM
Glendale Resource Area

PATHWAY INDICATORS		Current Condition: ENVIRONMENTAL BASELINE			Alternative 2 & 3: EFFECTS OF THE ACTION(S)[2]			
		Properly Functioning[1]	**At Risk[1]**	***Not* Properly Functioning[1]**	**Restore[2]**	**Maintain[2]**	**D egrade[2]**	
Water Qual.	Temperature		WA			X		
	Sediment			AM		X		
	Chem. Contam./ Nutrient Load	PJ				X		
	Physical Barriers	WA;ODFW				X		
Habitat Elements	Substrate			AM		X		
	Large Woody Debris			ODFW		X		
	Pool Frequency		ODFW			X		
	Pool Quality			ODFW		X		
	Off-Channel Habitat		ODFW;PJ			X		
	Refugia			PJ;WA		X		
Chan. Cond. & Dyna.	Width/Depth Ratio	ODFW				X		
	Streambank Condition		ODFW			X		
	Floodplain Connectivity	PJ				X		
Flow/Hydro	Peak/Base Flows		WA			X		
	Drainage Network Increase			WA		X		
Wshed Condition	Road Density and Location			WA		X		
	Disturbance History		WA			X		
	Landslide Rates	WA;PJ				X		
	Riparian Reserve			WA		X		

APPENDIX 4 SILVICULTURAL PRESCRIPTIONS

Five Rogues Project

I. INTRODUCTION

The Five Rogues Timber Sale Planning Area is contained within the boundaries of the Wolf Creek, Grave Creek/Sunny Valley and Grave Creek/Placer 6th field watershed boundaries. The Planning Area is located in portions of Township (T) 33S, Range (R) 5W, Sections 5-8, 17-20, 29-32; T 33S, R 6 W, Sections 1-3, 10-16, 21-29, 32-36; T 34S, R 5W, Sections 5-8, 18-19; T 34S, R 6 W, Sections 1-5, 8-16, 18, 22-24.

The Planning Area is approximately 29,500 acres in size intermixed with public and private lands (which includes the communities of Wolf Creek and Sunny Valley). Proposed activities, however, would be limited to within the 9,600 acres of BLM managed lands.

II. RESOURCE OBJECTIVES

All of the proposed harvest units are within the matrix land allocation as described in the Northwest Forest Plan. The Medford Resource Management Plan (RMP) further separates matrix into general forest management area (GFMA) and connectivity/diversity blocks each having specific management objectives and guidelines. Visual resource management II (VRM II) objectives overlay portions of matrix within one mile of the I-5 highway corridor.

A. The overall objectives for general forest management areas and connectivity blocks (Medford RMP, p. 38, 39) are to:

- produce a sustainable supply of timber and other forest commodities,
- provide connectivity (along with other allocations such as riparian reserves) between late successional reserves,
- provide habitat for a variety of organisms associated with both late-successional and younger forests, ecological functions and maintenance of ecologically valuable structural components such as down logs, snags, and large trees.
- provide early-successional habitat.

B. The portion of the Planning Area within Visual Resource Management Class II land allocation would emphasize low levels of change to the characteristic landscape (RMP, p. 70).

III. VEGETATION MANAGEMENT STRATEGY

Tanoak, canyon live oak, madrone and chinkapin are the predominant woody species found in the understory within the Five Rogues timber Sale Planning Area. These species are associated with different site conditions. Tanoak cover is generally found on the more productive sites; canyon live oak on the hot aspects and shallow soils; chinkapin on shallow soils or nutrient deficient sites; and madrone on a wide range of conditions.

Canyon live oak and tanoak are both tolerant to shade and can exist in the understory for a long period of time. They would respond in growth given full sunlight and are intense competitors to conifer growth following a stand-replacing regeneration harvest or high intensity wildfire event. Tanoak is the most aggressive competing species in the Planning Area and has the potential for a vegetation management problem after a high intensity disturbance. Madrone is intermediate in tolerance and can exist in the understory under a light overstory but is shaded out under a more densely stocked stand. Chinkapin is intolerant of shade.

The use of prescribed burning is the method of treatment for both correcting the existing high level of fuels and initiating a long-term maintenance strategy of treating fuel accumulations with light underburning . The absence of fire has allowed stands to become overstocked and canopies to be more closed. Past fire suppression efforts have effectively reduced or eliminated the agent of fire. Reducing the low to moderate intensive fire return intervals has also increased the presence of tanoak and canyon live oak.

Besides fire, no known natural controls exist on the sites dominated by tanoak and canyon live oak. Fire has historically been the regulator in the Douglas-fir and Tanoak plant series. Dense stands with high canopy closure prevent the invasion of grasses and shade intolerant hardwood species such as madrone and chinkapin.

IV. Harvest System

Commercial Thin (CT). This treatment applies to units #5S-1, #5S-2A, #5S-2B, #5S-3, #13S-1, #13S-2, #13S-3A, #13S-3B, #13S-3C, #15S-2A, #15S-2B, #15S-2C, #15S-2D, #15S-2E, #15S-2F, #15-3, #27-1A, #27-1B, #27-1C, #27-2, #27-3, #27-4, #32-2, #32-3, #33-5, #35-2A, #35-2B, #35-3, #35-5, #35-6, #35-7, #35-8,

The stands selected are either young commercial aged stands or all aged stands with a predominant young commercial component. The desired future condition is a vigorous stand of “second growth” conifers exhibiting good tree growth, 80%+ canopy closure, scattered large “legacy” conifers, and a component of hardwoods, snags, and residual coarse woody debris (CWD). New snag and CWD recruitment would come from residual legacy trees and the residual conifers left after thinning. Commercial thinning within the VRM2 corridor would consider visual changes to the landscape.

The primary purpose of commercial thinning is to control existing stocking levels and increase and redistribute growth on the remaining trees to enhance stand yield and quality. Measures of forest stocking levels, such as Relative Density (Drew and Flewelling, 1979) provide a relative density value of the actual density of a stand relative to a maximum. The desired condition after harvest is approximately 35% of the maximum, or a relative density value of 0.35. Relative densities above .55 (the mortality zone) are considered to be in the zone where trees become suppressed and die because of competition. While some stands within Five Rogues exhibit even-aged characteristics that are appropriate for relative density comparisons, most of the stands are comprised of mixed ages (multiple cohorts) that reflect previous harvesting and/or historical fire intervals. The mean interval between fires has been noted to be less than 30 years for the Douglas-fir plant series in the Klamath Province (Atzet and Martin, p. 7). For these stands the residual target stand basal area after harvest is 100 - 120 sq.ft / ac.

Thinning from below removes the smaller less vigorous conifers. Leave trees should be the dominant, fast-growing conifers with healthy crowns, generally 30% or greater crown ratios. Tree condition should be considered as priority for leave over even spacing. Areas in the stand that do not have at least 100 sq ft./ac of **conifer** basal area should be left alone. The occasional old growth conifers in the stand should be retained for structural variety and are part of the leave basal area. The leave basal area chosen, 100-110 sq ft/ac, gives a good combination of long term stand growth and economically viable thinning at this time. Specific post harvest or site preparation work would be evaluated after harvest.

Selection Cut (SC). This treatment applies to unit #1S-4A, #1S-4B, #1S-7 and #29-1

The stands selected are generally all aged with multiple canopy layers and overstocked in small or large portions of the unit. The objective of the selection cut is to individually mark trees to modify the existing stand structure. This is intended to capture wood volume of suppressed conifers, overstocked portions of the stand to redistribute growth potential to the residual trees and in some instances, release conifer reproduction. Favorable characteristics of the existing stand structure can be retained such as high canopy retention approaching 40% canopy cover, 100-120 sq.ft. basal area/ac , snags, down logs, and hardwood components.

Trees in all diameter classes are considered crop trees. Some discrimination among the immature trees must occur, such that the least healthy are harvested during the cutting cycle operations and the most vigorous are retained. Priority leave for large conifers are the largest and most vigorous, while meeting the objectives above.

Group Selection (GS). This treatment applies to unit #10-1

Unit 20-1 is within Visual Resource Management II (VRM II) lands. The management actions/direction is to manage VRM II lands for low levels of change to the characteristic landscape. Management activities may be seen but should not attract the attention of the casual observer (ibid., p. 70).

The Desired Future Condition is an overstory of large conifers with ½ to 1 acre openings having a variety of age and size classes of conifers from seedlings to pole size with a component of hardwoods, snags, and residual course woody debris (CWD). New snag and CWD recruitment would come from residual legacy trees and the next stand of conifers would act as a replacement source for the legacy overstory trees as mortality occurs.

The group selection system is an uneven-aged silvicultural system in which small groups approximately 1 acre in size are to be are to be periodically harvested and regenerated within the unit boundary. Approximately 7-10 % within the total unit boundary would be harvested at this entry. The first group harvested would be replanted, allowed to grow, and then harvested at approximately age 150. This would create a mosaic of age classes scattered across the larger unit. Harvest all of the trees within small openings of ½ to 1 acre. The reserve trees in between the openings would count towards the 7-10 conifer leave trees per acre. The objective is to create vertical structure and imitate small openings often created in un-entered mature stands when small root rot pockets occur or windthrow creates small openings.

Regeneration harvest (RH). This treatment applies to unit #6S-5, #9-1, #9-2, #15S-4, #15S-6, 15S-7, #32-1,

The desired future condition is a scattered overstory of large "legacy" conifers (7-10 TPA) with well-stocked understory of vigorous conifers, and component of hardwoods, snags, and residual course woody debris (CWD). New snag and CWD recruitment would come from residual legacy trees and the next stand of conifers would act as a replacement source for the legacy overstory trees as mortality occurs. The purpose of a regeneration harvest is to replace the existing mature stand with a new young even-aged stand within the guidelines of the RMP and Northwest Forest Plan.

Harvest the merchantable conifers leaving 7 to 10 of the large conifers per acre "proportionally representing the total range of tree size classes greater than 20 inches DBH and representing all conifer species present (Medford RODS/MFP, 1995)." The leave trees should be spaced throughout the unit rather than clumped, unless it is determined they need to be clumped for habitat retention for a wildlife species of concern. A minimum of 1/3 of the leave trees should be without obvious defect (conk, insects, etc.). Leave up to 10 conifers per acre where the soils are rocky, and small rock outcrops are present.

Units within connectivity blocks are designated by the Medford District RMP/ROD with a primary objective of maintaining late successional vegetation on a minimum of 25- 30% of each block The desired condition is a scattered overstory of large "legacy" conifers (12-18TPA) with a well-stocked understory of vigorous conifers, and component of hardwoods, snags, and residual coarse woody debris (CWD).

5-Rogues Timber Sale

STAND DESCRIPTIONS

UNIT 5S-2A,5S-2B,5S-3,32-2,32-3 T.34 S., R.5 W., sections 5

I. Stand Description: Units 5S2A,B and 5S-3 are ridgetop and upper slope stands. Diameters generally range from 14-24". Units 32-2,3 are mature stands of Douglas-fir with occasional sugar pine. Diameters generally range from 12 to 36" with a few trees being larger. Stand is starting to show signs of overstocking and some mortality. There are flat-topped trees, larger snags, and openings created where trees have fallen. Other hardwoods present include big leaf maple, madrone, and black oak. The understory consists of madrone trees 16-30' tall mixed with an occasional white oak and black oak. Hardwoods are dying out of the stand. Along the ridge, larger and older Douglas-fir can be found.

II. Analysis: This area is designated matrix. There are concerns due to the close proximity of the stands with the Benjamin Gulch drainage that has received heavy logging activity in the past. Existing trees are predominately mature second growth with closed canopy. Some mortality is occurring. Some healthy conifer regeneration exists.

Prevention/Avoidance Strategies: Maintenance of canopy cover and understory density control would slow/prevent the establishment and growth of competitive vegetation.

III. Recommended Treatment: Commercial thinning is the recommended treatment. The thinning should be from below with the emphasis on maintaining a minimum canopy cover of 60% across the unit. Generally, this should correspond to an approximate 25’ x 25’ to 35’x35’ spacing on these units. Cableyard, handpile slash and burn piles.

UNIT 27-1A,27-1B,27-1C,27-2,27-3,27-4 T.33S., R.6W., section 27

I. Stand Description: These units are even-aged stands of second growth Douglas-fir with occasional sugar pine. Diameters generally range from 12 to 36" with a few trees being larger. Stands are starting to show signs of overstocking and some mortality. Other hardwoods present include madrone, and black oak. There is very limited conifer regeneration within the stand.

II. Analysis: This area is designated matrix.

Prevention/Avoidance Strategies: Maintenance of canopy cover and understory density control would slow/prevent the establishment and growth of competitive vegetation.

III. Recommended Treatment: Commercial thinning is the recommended treatment. The thinning should be from below with the emphasis on maintaining a minimum canopy cover of 40% across the unit. Generally, this should correspond to an approximate 25’ x 25’ to 35’x 35’ spacing on these units. Commercial thinning would result in stands with greater spacing between trees and tree canopies in the future stand which would provide a stand with healthier growing conditions so the stand may reach late succession characteristic stand sooner than with natural thinning processes. Cable and tractor yard, handpile slash, burn piles.

UNIT 32-1 **T.33S., R.6W., section 32**

I. Stand Description: Unit 32-1 is a mature stand of older Douglas-fir with scattered ponderosa and sugar pine. Diameters generally range from 16-30". Decay is evident in many of the trees. Hardwoods consist of madrone, tanoak, and limited numbers of canyon live oak. Natural suppressed Douglas-fir regeneration exists. This stand occupies the lower slope area of a west facing slope. A natural meadow is located on the southern half of this 40 acre parcel.

II. Analysis: This area is designated matrix. Stand meets RMP guidelines for regeneration harvest. Stand is in a state of decline as evidenced by thinning tops and presence of conk.

Prevention/Avoidance Strategies: Timely site preparation and reforestation following harvest would allow conifer seedlings the benefit of occupying the site before competitive species such as tanoak.

III. Recommended Treatment: An even-aged regeneration harvest (RH) is recommended for unit 32-1. Harvest merchantable conifers greater than 7.5 inches dbh. Retain 7 conifers across the range of diameters over 20" dbh per acre. Retained conifers should approximate species composition of present stand and should be dispersed throughout the unit. Retained conifers should consist of both sound and cull trees. Retain one additional conifer greater than 16" dbh for future snags and coarse woody debris. Retain 3-5 large hardwoods per acre where present

Helicopter yard and limited shovel yarding down to existing road. Slash brush and damaged conifer regeneration. Handpile slash and burn piles. Plant with a mixture of Douglas-fir and rust resistant sugar pine. Conduct follow-up maintenance, protection treatments such as brushing, pre-commercial thinning, and tubing throughout stand establishment.

UNITS 33-5, T.33S., R.6W., section 33

I. Stand Description: Unit 33-5 is an even-aged stand of second growth Douglas-fir with occasional sugar pine. Diameters generally range from 12 to 36" with a few trees being larger. Stand is starting to show signs of overstocking and some mortality. Other hardwoods present include madrone, and black oak. There is very limited conifer regeneration within the stand. This unit is located on east and northeast facing slopes.

II. Analysis: This area is designated matrix.

Prevention/Avoidance Strategies: Maintenance of canopy cover and understory density control would slow/prevent the establishment and growth of competitive vegetation.

III. Recommended Treatment: Commercial thinning is the recommended treatment. The thinning should be generally from below with the emphasis on maintaining a minimum canopy cover of 40% across the unit. Generally, this should correspond to an approximate 25’ x 25’ to 35’x 35’ spacing on these units. Commercial thinning would result in stands with greater spacing between trees and tree canopies. Cable and tractor yard, handpile slash, burn piles.

UNITS 15S-2A-F, 35-8 T.33S, R.6W, section 35, T.34S, R6W section 15

I. Stand Description: These are even-aged stands of second growth Douglas-fir with occasional sugar pine. Stand is starting to show signs of overstocking and some mortality. Other hardwoods present include madrone, and black oak. There is very limited conifer regeneration within the stand. This unit is located on east and northeast facing slopes.

II. Analysis: These units are within matrix with VRM II restrictions. The RMP states that all BLM administered lands would meet visual quality objectives (RMP, p. 70). These units are within the foreground/middleground (within one mile or to the first ridge, whichever is closer, RMP, p. 70) as VRM II along the I-5 freeway. The management actions/direction is to manage VRM II lands for low levels of change to the characteristic landscape. "Management activities may be seen but should not attract the attention of the casual observer" (ibid., p. 70).

Prevention/Avoidance Strategies: Maintenance of canopy cover and understory density control would slow/prevent the establishment and growth of competitive vegetation.

III. Recommended Treatment: Commercial thinning is the recommended treatment. The thinning should be from below with the emphasis on maintaining a minimum canopy cover of 40% across the unit. Generally, this should correspond to an approximate 25' x 25' to 35'x35' spacing on these units. Commercial thinning would result in stands with greater spacing between trees and tree canopies in the future stand which would provide a stand with healthier growing conditions so the stand may reach late succession characteristic stand sooner than with natural thinning processes Cable,tractor and helicopter yard. Handpile slash, burn piles.

UNITS 35-2A,B,35-3,35-5,35-6,35-7 T.33S., R.6W., section 35

I. Stand Description: Units 35-2A,B, 35-3, 35-5, 35-6, 35-7 are even-aged stands of second growth Douglas-fir with occasional sugar pine. Diameters generally range from 12 to 28" with a few trees being larger. Stand is starting to show signs of overstocking and some mortality. Other hardwoods present include madrone, and black oak. There is very limited conifer regeneration within the stand. This unit is located on west and southwest facing slopes.

II. Analysis: These units are within matrix with VRM II restrictions. The RMP states that all BLM administered lands would meet visual quality objectives (RMP, p. 70). These units are within the foreground/middleground (within one mile or to the first ridge, whichever is closer, RMP, p. 70) as VRM II along the I-5 freeway. The management actions/direction is to manage VRM II lands for low levels of change to the characteristic landscape. “Management activities may be seen but should not attract the attention of the casual observer” (ibid., p. 70).

Prevention/Avoidance Strategies: Maintenance of canopy cover and understory density control would slow/prevent the establishment and growth of competitive vegetation.

III. Recommended Treatment: Commercial thinning is the recommended treatment. The thinning should be from suppressed and codominant canopy classes with the emphasis on maintaining a minimum canopy cover of 40% across the unit. Generally, this should correspond to an approximate 25’ x 25’ to 35’x35’ spacing on these units. Special attention should be given to unit 35-2. This unit is adjacent to a landowner with structures nearby. Trees to be cut should be feathered 100’ into the cutting units along the boundary near residence. Feathering would be progressively thinned from these boundaries from 100% retention to approximately 110 ft^2 per acre.
Helicopter yard, handpile slash, burn piles.

UNITS 1S-4A, 1S-4B, 1S-7, T.34S., R.6 W., section 1

I. Stand Description: Units are mature stands of Douglas-fir with occasional sugar pine. Diameters generally range from 20-36" with a few trees being larger. Stands are showing signs of overstocking and some mortality. There are flat-topped trees, larger snags, and openings created where trees have fallen. Other hardwoods present include Canyon Live oak, madrone, and black oak. There is conifer regeneration within the stand. These stands have been entered before with a commercial thin.

II. Analysis: This area is designated matrix. There are Visual Resource Management concerns due to the close proximity of the stands with the I-5 corridor and Sunny Valley, Oregon. A portion of 1S-7 is withing VRM II. Existing trees are predominately mature second growth with closed canopy. Some mortality is occurring. Patchy conifer regeneration exists.

Prevention/Avoidance Strategies: Maintenance of canopy cover and density would slow/prevent the establishment and growth of competitive vegetation. Controlling competitive vegetation through maintenance of canopy cover would also not substantially add to any existing seedbank in the soil. While shrubs would not be a major competitor within the existing stand, control or lack of it could be a factor in the establishment of young conifers following a future regeneration harvest.

III. Recommended Treatment: Selective cutting is the recommended treatments. The selection should be from below with the emphasis on maintaining a minimum canopy cover of 50% across the unit. 1S-7 should maintain 50- 60% canopy. Generally, the trees selected for harvest would be suppressed and showing outward signs of low vigor. Cable yard, handpile slash, burn piles.

Future harvesting could include removing large overstory trees in excess of the number required for regeneration harvest in matrix would be removed. The time required before the removal of these overstory trees would be dependant upon the development of understory conditions that meet current management recommendations for Survey and Manage species. Once these conditions are met by the understory and a limited overstory, harvest of retained large conifers in excess of the number called for in the RMP would occur.

UNITS 9-1, 9-2 **T.34S., R.6 W., section 9**

I. Stand Description: Unit 9-1 and 9-2 are stands of mature and older Douglas-fir with scattered ponderosa and sugar pine. Diameters generally range from 16-30". Decay is evident in many of the trees. Hardwoods consist of madrone and limited numbers of canyon live oak. Natural suppressed Douglas-fir regeneration exists. This stand occupies the lower slope area of a south facing slope.

II. Analysis: This area is designated matrix. Stands meet RMP guidelines for regeneration harvest. Stands are in a state of decline as evidenced by thinning tops and presence of conk.

Prevention/Avoidance Strategies: Timely site preparation and reforestation following harvest would allow conifer seedlings the benefit of occupying the site before competitive species such as tanoak.

III. Recommended Treatment: An even-aged regeneration harvest (RH) is recommended. Harvest merchantable conifers greater than 7.5 inches dbh. Retain 6 to 8 conifers across the range of diameters over 16" dbh per acre. Retained conifers should approximate species composition of present stand and should be dispersed throughout the unit. Retained conifers should consist of both sound and cull trees. Retain one additional conifer greater than 16" dbh for future snags and coarse woody debris. Retain 3-5 large hardwoods per acre where present

Cable yard up to existing road. Slash brush and damaged conifer regeneration. Handpile slash and burn piles. Plant with a mixture of Douglas-fir and rust resistant sugar pine. Conduct follow-up maintenance, protection treatments such as brushing, pre-commercial thinning, and tubing throughout stand establishment.

UNITS 13S-1, 13S-2,13S-3A,13S-3B,13S-3C, T.34S., R.6W., section 13

I. Stand Description: These Units are even-aged stands of second growth Douglas-fir with occasional sugar pine. Diameters generally range from 12 to 26" with a few trees being larger. Stand is starting to show signs of overstocking and some mortality. Other hardwoods present include madrone and black oak. There is very limited conifer regeneration within the stand. These units are located on ridge systems that have faces with northwest and southeast slopes. There are some scattered pockets of incense-cedar and white fir.

II. Analysis: This area is designated matrix. Existing trees are predominately mature second growth with closed canopy. Some mortality is occurring. Some healthy conifer regeneration exists.

Prevention/Avoidance Strategies: Maintenance of canopy cover and understory density control would slow/prevent the establishment and growth of competitive vegetation.

III. Recommended Treatment: Commercial thinning is the recommended treatment. The thinning should be from below with the emphasis on maintaining a minimum canopy cover of 40%. Generally, this should correspond to an approximate 25’ x 25’ to 35’x35’ spacing on these units. Commercial thinning would result in stands with greater spacing between trees and tree canopies in the future stand which would provide a stand with healthier growing conditions so the stand may reach late succession characteristic stand sooner than with natural thinning processes. Cable and helicopter yard, handpile slash, burn piles.

UNITS 15S-4,6,7 **T.34S., R.6 W., section 15**

I. Stand Description: : Unit 15S-4,6,7 stands of mature and older Douglas-fir with scattered Ponderosa and Sugar pine. Diameters generally range from 18-36". Decay is evident in many of the trees. Hardwoods consist of madrone, tanoak and canyon live oak. Natural suppressed Douglas-fir regeneration exists. These stands occupy the mid to upper portions of a west facing slope.

II. Analysis: Stand meets RMP guidelines for regeneration harvest. Stands are within Connectivity/Diversity block, which would maintain 25-30% in late successional forest and contain 12-18 conifers per acre.

Prevention/Avoidance Strategies: Timely site preparation and reforestation following harvest would allow conifer seedlings the benefit of occupying the site before competitive species such as tanoak.

III. Recommended Treatment: An even-aged regeneration harvest (RH) is recommended for units 15S-4,6,and 7. Harvest merchantable conifers greater than 7.5 inches dbhand retain 12-18 trees per acre across the range of diameters over 20" dbh per acre. Retained conifers should approximate species composition of present stand and should be dispersed throughout the unit. Retained conifers should consist of both sound and cull trees. Retain one additional conifer greater than 16" dbh for future snags and coarse woody debris. Retain 3-5 large hardwoods per acre where present

Helicopter yard or cable yard. Slash brush and damaged conifer regeneration. Handpile slash and burn piles. Plant with a mixture of Douglas-fir and rust resistant sugar pine. Conduct follow-up maintenance, protection treatments such as brushing, pre-commercial thinning, and tubing throughout stand establishment.

UNITS 6S-5 **T.34S., R.5 W., section 6**

I. Stand Description: : Unit 6S-5 stands of mature and older Douglas-fir with scattered Ponderosa and Sugar pine. Diameters generally range from 18-36". Decay is evident in many of the trees. Hardwoods consist of madrone, tanoak and canyon live oak. Natural suppressed Douglas-fir regeneration exists. This stand occupies the east face of a slope.

II. Analysis: This area is designated matrix. Stand meets RMP guidelines for regeneration harvest. Stand is in a state of decline as evidenced by thinning tops and presence of conk.

Prevention/Avoidance Strategies: Timely site preparation and reforestation following harvest would allow conifer seedlings the benefit of occupying the site before competitive species such as tanoak.

III. Recommended Treatment: An even-aged regeneration harvest (RH) is recommended for unit 6S-5. Harvest merchantable conifers greater than 7.5 inches dbh. Retain 7 to 10 conifers across the range of diameters over 20" dbh per acre. Retained conifers should approximate species composition of present stand and should be dispersed throughout the unit. Retained conifers should consist of both sound and cull trees. Retain one additional conifer greater than 16" dbh for future snags and coarse woody debris. Retain 3-5 large hardwoods per acre where present

Helicopter yard. Slash brush and damaged conifer regeneration. Handpile, slash and burn piles. Plant with a mixture of Douglas-fir and rust resistant sugar pine. Conduct follow-up maintenance, protection treatments such as brushing, pre-commercial thinning, and tubing throughout stand establishment.

UNITS 5S-1 **T.34S., R.5 W., section 6**

I. Stand Description: Unit 5S-1 is an even-aged stand of second growth Douglas-fir with occasional sugar pine. Diameters generally range from 12 to 26" with a few trees being larger. Stand is starting to show signs of overstocking and some mortality. Other hardwoods present include madrone and black oak. There is very limited conifer regeneration within the stand. This unit is located on an east facing slopes.

II. Analysis: This area is designated Matrix.

Prevention/Avoidance Strategies: Maintenance of canopy cover and understory density control would slow/prevent the establishment and growth of competitive vegetation.

III. Recommended Treatment: Commercial thinning unit 5S-1 is the recommended treatment. The thinning should be from below with the emphasis on maintaining a minimum canopy cover of 60% across the unit. Generally, this should correspond to an approximate 25’ x 25’ to 35’x35’ spacing. Commercial thinning would result in stands with greater spacing between trees and tree canopies in the future stand which would provide a stand with healthier growing conditions so the stand may reach late succession characteristic stand sooner than with natural thinning processes. Cable yard, handpile slash,burn piles.

UNIT 10-1 **T.33S., R.6 W., section 10**

I. Stand Description: : Unit 10-1 is a stand of mature and older Douglas-fir with scattered ponderosa and sugar pine. Diameters generally range from 18-36." Decay is evident in many of the trees. Hardwoods consist of madrone, tanoak and canyon live oak. Stand is in a state of decline as evidenced by thinning tops and presence of conk. Natural suppressed Douglas-fir regeneration exists. This stand occupies an east facing slope.

II. Analysis: This area is designated matrix. Stand meets RMP guidelines for regeneration harvest.

Prevention/Avoidance Strategies: Timely site preparation and reforestation following harvest would allow conifer seedlings the benefit of occupying the site before competitive species such as tanoak.

III. Recommended Treatment: Group slection harvesting is recommended using 1 acre openings. The openings should have at least one and half site tree distance between there boundaries (150 to 170 ft.). Harvest merchantable conifers greater than six inches dbh. These group selection opening would have no retention trees. The surrounding stand next to the 1 acre openings would not be harvested at this time and would retain all its current overstory characteristics except where it borders the 1 acre openings.

Helicopter yard. Slash brush and damaged conifer regeneration. Handpile slash and burn piles. Plant with a mixture of Douglas-fir and rust resistant sugar pine. Conduct follow-up maintenance, protection treatments such as brushing, pre-commercial thinning, and tubing throughout stand establishment.

UNIT 29-1 **T.33S., R.6 W., section 29**

I. Stand Description: Unit 29-1 stands of mature and older Douglas-fir with scattered Ponderosa and Sugar pine. Diameters generally range from 18-36". Decay is evident in many of the trees. Hardwoods consist of madrone, tanoak and canyon live oak. Natural suppressed Douglas-fir regeneration exists. These stands occupy south facing slopes.

II. Analysis: This unit is in a connectivity block as designated by the Medford District RMP/ROD with a primary objective of maintaining late seral vegetation on a minimum of 25- 30% of the section .

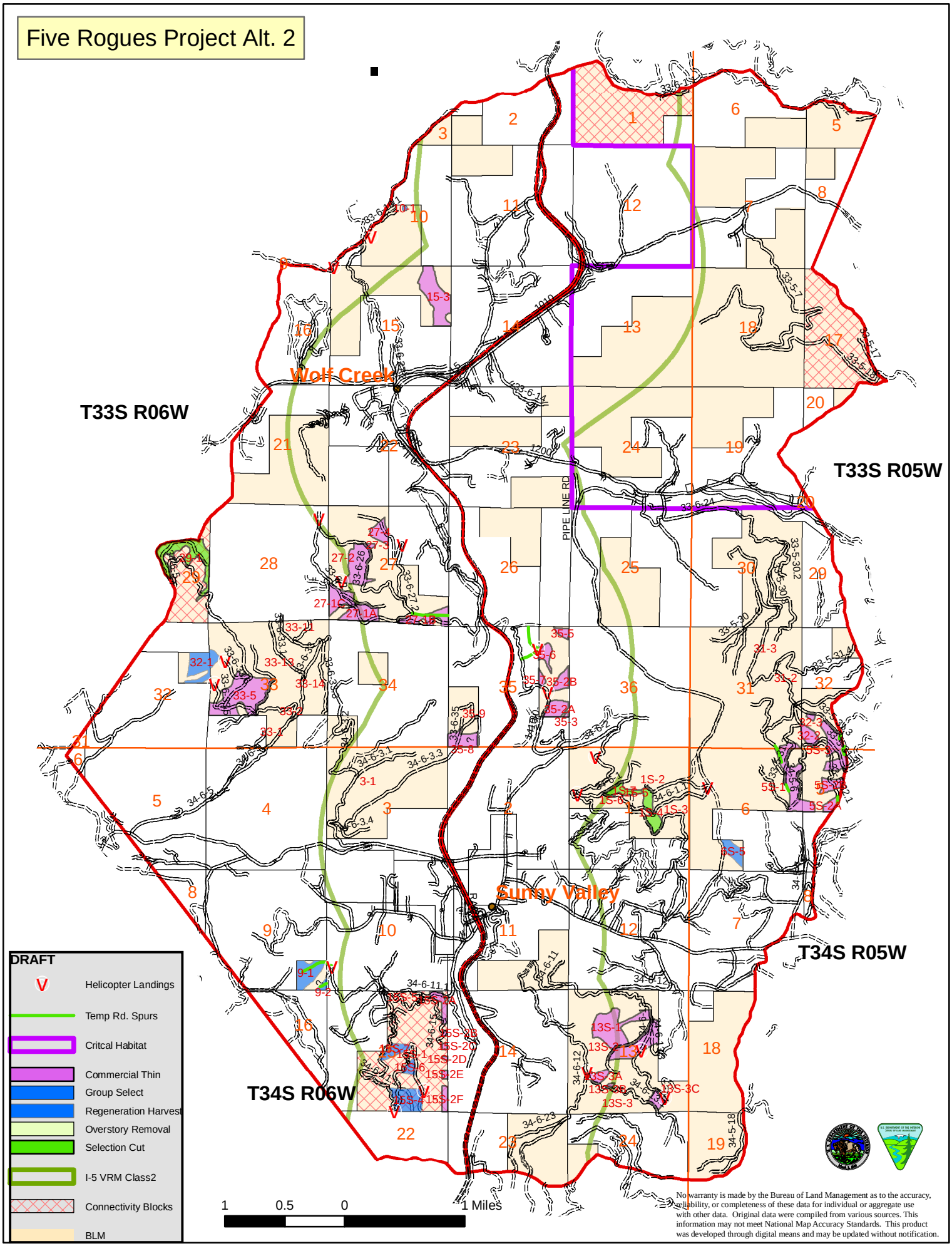
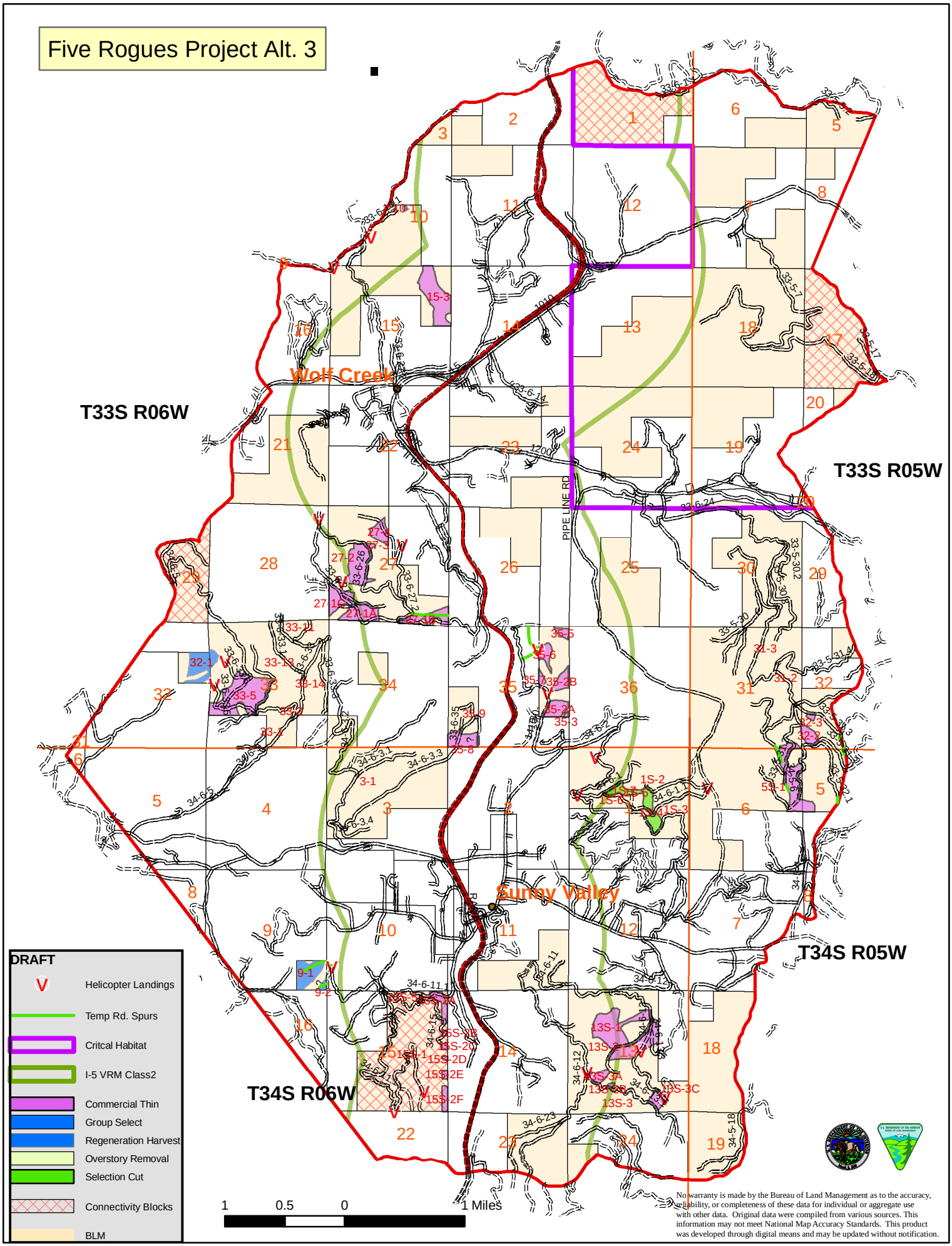
Prevention/Avoidance Strategies: Timely site preparation and reforestation following harvest would allow conifer seedlings the benefit of occupying the site before competitive species such as tanoak.

III. Recommended Treatment: Selective cutting is the recommended treatment. The selection should be from below with the emphasis on maintaining a minimum canopy cover of 50% across the unit. Generally, the trees selected for harvest would be suppressed and showing outward signs of low vigor. Future harvesting could include removing large overstory trees in excess of the number required for regeneration harvest in matrix would be removed. Once these conditions are met by the understory and a limited overstory, harvest of retained large conifers in excess of the number called for in the RMP would occur.

Helicopter yard. Slash brush and damaged conifer regeneration. Handpile slash and burn piles. Conduct follow-up maintenance, protection treatments such as brushing and pre-commercial thinning.

APPENDIX 5 ALTERNATIVE 2

Five Rogues Project Alt. 2



Five Rogues Project Alt. 3