

Willy Slide Project

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Proposed agency actions: The primary needs are for timber production and elk management to meet the land use objectives identified in the Medford District Resource Management Plan.

Type of statement: Environmental Assessment

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ENVIRONMENTAL ASSESSMENT
for the
Willy Slide Project

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Chapter 1 – Purpose and Need

1.1 Introduction

The Glendale Resource Area of the Medford Bureau of Land Management (BLM) proposes management activities within the Willy Slide Planning Area (PA). The PA is approximately 18 miles northwest of the town of Glendale and is delineated by the Walker/Gold Mountain/Panther HUC 6 (Hydrologic Unit Code) sub-watershed boundary. The PA encompasses approximately 16,000 acres in a checkerboard pattern of public and private ownerships. However, BLM planning decisions apply only to BLM-administered lands. The Walker/Gold Mountain/Panther HUC 6 is a sub-watershed within the larger 55,842-acre West Fork Cow Creek fifth-field watershed (WFCC), a key watershed.

1.2 Purpose and Need for the Proposal

The purpose of the project is to meet the Medford District Resource Management Plan (RMP) objectives for timber management and elk management. The RMP states that “Suitable commercial forestland would be managed to assure a high level of sustained timber productivity. Emphasis would be placed on use of intensive forest management practices and investments to maintain a high level of sustainable resource production while maintaining long-term site productivity, biological legacies (retained green tree-trees, snags, and coarse woody debris), and a biologically diverse forest matrix” (RMP p. 187). The PA is within one of the four elk management areas within the Medford District. One of the management objectives for elk is creating small openings for forage (RMP, p. 45).

Relevant issues for the Planning Area were identified by the interdisciplinary team. This Environmental Assessment (EA) focuses on these relevant issues, both in terms of Project Design Features (PDFs) and in describing environmental effects.

1.3 Plan Conformance

This EA tiers to and conforms 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-Medford District Proposed Resource Management Plan/Environmental Impact Statement and Record of Decision* (EIS, 1994 and RMP/ROD, 1995); 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). The term “tiering” refers to the coverage of general matters in broader environmental impact statements, as those listed above.

Parts of the *West Fork Cow 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).

1.4 Decisions to be Made

The Glendale Resource Area Field Manager would:

- 1) Select an Alternative.
- 2) Determine if the selected Alternative would have significant effects, and whether to prepare an environmental impact statement, or issue a Finding of No Significant Impact (FONSI).
- 3) Determine whether the selected Alternative is consistent with the Medford District Resource Management Plan and broader level plans.

1.5 Issues of Concern

The following relevant issues were identified for the project by the interdisciplinary team (IDT) as being potentially significant. Relevant issues are conflicts that may be resolved through alternative development and project design features (PDFs). They also serve the purpose of sharply defining potential effects of each alternative.

- A. Elk habitat. The Planning Area is within an RMP designated elk management area. The quantity of elk forage is low, late-successional cover is low, and road density is high.
- B. Port-Orford-cedar. Management activities have the potential to spread the Port-Orford-cedar root disease (*Phytophthora lateralis*) within the Planning Area.
- C. Hydrologic effects. Management activities could increase seasonal runoff specifically in the transient snow zone.

Chapter 2 – Alternatives

2.1 Introduction

This chapter describes the Proposed Action and Alternative proposals. It compares potential environmental impacts as specified in 40 CFR § 1502.14. Two action Alternatives were developed by the interdisciplinary team after considering the relevant issues identified in Chapter 1. Descriptions focus on potential actions, outputs, and any related mitigation.

2.2 Project Design Features

Project Design Features (PDFs) are specific measures included in the design of the proposed action to minimize adverse impacts on the human environment. Many PDFs were developed by the ID team to limit impacts from either one or several Alternatives. Where the PDF is limited to one or two Alternatives, it is so noted. 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.

Any changes to PDFs during project implementation would require approval by the Glendale Field Manager.

2.2.1 Streams and Riparian Zones

Informal consultation is not required with the National Marine Fisheries Service (NOAA Fisheries) for the proposed threatened and endangered listing of Oregon Coast coho salmon. A not likely to adversely affect (NLAA) letter would be provided in the Willy Slide analysis file.

Riparian reserves have been established along all streams or waterbodies in accordance with the Medford District ROD/RMP (pp. 26, 27). Reserve widths are 160 feet (one site potential tree height) on each side of non fish-bearing streams. There would be a 100 foot buffer around wet areas (springs and seeps). A riparian reserve at least 320 feet wide (two site potential tree heights) would be reserved between Unit 27-6 and West Fork Cow Creek, which is a fish bearing stream.

Active landslides would be avoided in harvesting timber and road construction. A riparian reserve several hundred feet wide would be retained on a relatively unstable area between West Fork Cow Creek/Panther Creek and Unit 27-2A and 27-2B. (Note: all riparian reserve widths and other protection buffer widths are slope distance. Also, no unstable ground other than between West Fork Cow Creek/Panther Creek and Unit 27-2A, B is adjacent to harvest units.)

No yarding would occur through riparian reserves except for Unit 27-4. The logs would be yarded along the ridge, parallel to streams, to road # 31-9-27.1.

Helicopter refueling sites 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 the proposed listed fish (i.e. Oregon Coast coho salmon).

2.2.2 Roads

Temporary spur roads and landings built under all the Alternatives would be fully decommissioned after use. This would involve discontinuous subsoiling (Davis) with winged rippers, mulching, pulling culverts, water-barring and barricading, and planted with conifer seedlings, and/or native grass/forbs mixtures.

Temporary roads and 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.

New construction, decommissioning, normal road maintenance, road renovation, and log hauling would be allowed between May 15 and October 15 of the same calendar year. Renovation would consist of roadside brushing, reshaping and restoring the surface where necessary, maintaining or improving drainage structures, and applying rock surfacing where needed. If the roads are deemed too wet, no hauling would be allowed unless approved by the Field Manager. Reasons to suspend hauling on non-paved roads include: water is flowing on the surface of the road or ditchlines and when loaded log tire deflection exceeds 2 inches in the road surface. The Field Manager may approve a provisional off-season log hauling agreement, for example 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.

Dust abatement using water would be implemented on haul roads to protect the fine materials in the road surface. Water would be drawn from sources not infested with the Port-Orford-cedar root disease fungus (*Phytophthora lateralis*), or treated with bleach as stated in the POC EIS (pp. 2-17 to 2-20). Water drafting sites would need prior 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 proposed listed fish (i.e. Oregon Coast coho salmon).

Surface area of erodible earth exposed at any one time by stump removal and excavation would not exceed 2 acres after September 15 to avoid excessive erosion during fall rains.

Excavated material would be end-hauled to designated locations, where necessary, to maintain site productivity, reduce ravel potential, or where side-casting would adversely affect riparian areas.

Energy dissipaters 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.

Road cuts, fill slopes, borrow material and other bare ground disturbed by road construction activities would be mulched and seeded prior to autumn rains (about the first week in October).

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. Landings would be subsoiled following logging and planted with conifers. Exceptions would be where landings utilize existing road prisms, in which case the original roads would not be subsoiled. Dust abatement on landings would include rocking, applying lignin, or watering. Adequate drainage would be provided to minimize erosion. 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 landing sites, other than those identified in this EA, would be approved by the Glendale Field Manager and would meet state and federal regulations.

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.

Soil should be removed from the stream channel following culvert replacement.

Culvert replacement work in stream channels would be restricted to between July 1 and September 15 in accordance with Oregon Department of Fish and Wildlife (ODFW) instream work period guidelines.

All new culverts that are placed in stream channels would be adequate to pass a 100 year peak flow.

2.2.3 Yarding of Timber

Tractor yarding would only be allowed between May 15 and October 15 (soil moisture permitting) of the same year to minimize the amount of soil disturbance and compaction. If the Field Manager determines that soils are too wet within this time period, tractor yarding would not be allowed until approved by him/her. If soils are sufficiently dry outside this season, tractor yarding would be allowed if approved by the Field Manager. 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. New skid roads would pre-designated and would be approved by the Authorized Officer.

Skid roads used in this timber sale would be discontinuously subsoiled with winged rippers 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.

Existing conifer regeneration would be protected during tractor yarding operations.

Partial suspension (at a minimum) would be required on all cable units to minimize soil disturbance.

The number of yarding corridors would be minimized to reduce soil compaction from cable yarding. Corridors would be located approximately 150 feet apart at the tail end. Lateral yarding would be required in all units to protect residual leave trees and existing conifer regeneration.

In overstory removal harvest units, trees would be felled away from residual conifer regeneration.

2.2.4 Special Status Species and their Habitats

Northern Spotted Owl

Any of the following PDFs may be waived in a particular year if nesting or reproductive success surveys conducted according to the U.S. Fish and Wildlife Service - endorsed survey guidelines

reveal that spotted owls are non-nesting or that no young are present that year. (USDI/USDA 2003, BA B-22). Waivers are valid only until March 1 of the following year. Previously known well established sites/activity centers are assumed occupied unless protocol surveys indicate otherwise. Timber sale units would be cleared for spotted owls in the spring prior to harvesting.

Work activities (such as tree felling, yarding, road construction, hauling on roads not generally used by the public, prescribed fire, blasting) would not be permitted within specified distances (see 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 1 and 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) would not take place within 0.25 mile of known active northern spotted owl nests between March 1 and 30 June (or until two weeks after the fledging period) without concurrence from the Level 1 consultation team.

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 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 Northwest Forest Plan ROD Standards and Guidelines (p. C-40) provided for specific coarse woody measures to be developed. 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 existing naturally occurring dead and down woody debris, greater than or equal to 16 inches diameter, would remain on the site.

2.2.6 Vegetation

Known populations of special status plant species categorized as “sensitive “ would be protected with a minimum 100-foot no-cut buffer, or the unit would be altered to exclude them.

Prior to initial move-in and all subsequent move-ins, heavy equipment would be washed before moving into the Planning Area to remove soil and plant parts that could spread invasive and noxious weeds.

2.2.7 Port-Orford-cedar

Activities proposed within the Willy Slide Project Planning Area are designed to comply with the *Record of Decision and Resource Management Plan Amendment for Management of Port-Orford-Cedar in Southwest Oregon, Coos Bay, Medford and Roseburg Districts* (2004).

Heavy equipment, including log trucks, would be washed prior to entering the Planning Area, as discussed under 2.2.6. They would be re-washed before re-entering the area if they visited another site to perform activities, such as log haul.

Operations in units 15-2 and 11-1, including log haul, would be done during the dry season, May 15 to October 15. If the Field Manager determines that conditions are too wet within this time period, log haul would not be allowed until approved by him/her.

2.2.8 Fuel Conditions

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. Burning would be done to prepare the site for planting, control competing vegetation, and reduce fire hazard.

Piles would be burned in the fall to winter season after one or more inches of precipitation have occurred. Underburning and broadcast burning would typically be done from fall through late spring. Specific adjustments to planned fuels treatments would require Field Manager approval.

Landing piles would be burned, if necessary, on all harvest units.

2.2.9 Air Quality / Smoke Management

All prescribed burning would be managed in a manner consistent with the requirements of the Oregon Smoke Management Plan and the Department of Environmental Quality's Air Quality and Visibility Protection Program. When burn units are adjacent to rural residential areas, burning would be timed to minimize the amount of residual smoke. This can be accomplished by burning when conditions for smoke dispersal are optimal such as during rainy days and periods when atmospheric instability is present.

The operational guidance for the Oregon Smoke Management Program is managed by the Oregon State Forester. .

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. Registration includes specific location, size of burn, topographic and fuel characteristics. Advisories or restrictions are received from the Forester on a daily basis concerning smoke management and air quality conditions.

Patrol and mop-up of burning piles would occur when needed to prevent burning areas from reburning or becoming an escaped fire.

2.2.10 Visual Quality

Management direction for VRM Class IV lands are as follows:

“Manage VRM Class IV lands for moderate levels of change to the characteristic landscape. Management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the effect of these activities through careful location, minimal disturbance, and should repeat the basic elements of form, line, color, and texture” (RMP. p. 70).

The Medford District Proposed RMP/EIS (Chapter 2-69) states that:

“No specific timber management constraints would apply to lands managed for VRM Class IV objectives. However, mitigation of visual effects would be incorporated where consistent with efficient timber harvest or other management activities.”

2.3 Alternatives. This section describes each alternative and compares their environmental effects.

2.3.1 Alternatives Considered but Eliminated from Further Analysis

The interdisciplinary team evaluated 4 Action Alternatives under an initial environmental analysis provided by Barnes and Associates. An Alternative that considered constructing new permanent roads was eliminated because of the conflict of road densities in the elk management area. Another Alternative that considered more regeneration harvesting was eliminated because of the elk management area objective of maintaining late-successional canopy cover. One of the Alternatives considered no regeneration harvesting under a “restoration, release emphasis.” However, this Alternative prescribed 62 acres of shelterwood harvesting. Shelterwood harvesting is a form of regeneration harvesting (leaving 12 – 25 trees per acre) and more regeneration harvest acres and total harvest acres than the two proposed under this EA.

2.3.2 Overview of the Alternatives

Tables 2-2 through 2-5 provides a listing of individual unit fuels management treatments, harvest treatments and road treatments. Table 2-6 summarizes specific harvest features by silvicultural management prescriptions, projected harvest volumes, transportation management needs and logging systems for each Action Alternatives. .

The accompanying maps, located in Appendix D of this document, provide a geographic display of the harvest and road prescriptions under each of the Alternatives.

The long-term desired future condition for regeneration harvest and overstory removal units is a scattered overstory of large “legacy” conifers with a component of hardwoods, snags and coarse woody debris and a fully stocked second canopy of vigorous conifers. The desired future condition for the riparian reserves is a fully functioning, diverse conifer, late-successional forest and riparian vegetation which closely resembles natural conditions, including a relatively closed canopy, large snags and large down logs.

In general, the **Regeneration Harvest (RH)** and **Overstory Removal (OR)** prescriptions would harvest timber, leaving at least six to eight large conifers per acre and two large hardwoods per acre (where available) as well as snags and down logs. In some cases, additional trees would be retained to provide a source for coarse woody debris. The intent in RH units is to regenerate a new stand of conifers while retaining a component of snags, downed wood, hardwoods, and overstory legacy trees. The RH units would be burned, if necessary, to prepare the site and then planted. In the OR units, the intent is to protect and release existing young conifer reproduction, with possible inter-planting, rather than relying solely on planting, as in RH units. Where needed OR units would be hand-piled and burned as necessary to reduce fuels and prepare the site for planting.

In the units proposed for **Selection Cut (SC)**, individual trees would be removed from the stand to provide increased growing space for residual large trees and established regeneration, and to

retain overstory shade for planted seedlings and encourage natural regeneration of conifers. In the units proposed for SC, 10 to 25 trees per acre would be retained in the overstory. Selection cut harvest units would be under-burned as necessary under cool conditions in order to protect the retention trees.

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.

In **Group Selection (GS)** units, small patch cuts would create openings of approximately 1 acre in size. The intent of the GS harvests is to create openings to provide for elk forage yet small enough that late successional conditions are maintained over the stand as a whole, and introduce forest stand structure diversity within large older stands. These interspersed openings would create small sized forage areas offering security within mid-seral and late-successional habitat areas. The GS openings would be hand-piled and burned to reduce fuels and prepare the site for planting.

Post harvest treatments. All units, except commercial thinning, would be evaluated for reforestation needs. Planting would be done as necessary to bolster stocking levels provided by natural regeneration. Additional treatments, such as shade-carding, mulching, providing browse protection and controlling competing vegetation may be required to ensure adequate establishment of the next forest stand

Quarries

Rock, if needed, would be obtained from the following quarries as shown on the accompanying “Rock Quarries” map located at the end of this document:

#A & B	Sec. 17, Twn. 31S., Rng. 8W.
#C	Sec. 19, Twn. 31S., Rng. 8W.
#D	Sec. 2, Twn. 32S., Rng. 9W.
#E & F	Sec. 33, Twn. 31S., Rng. 9W.
#G	Sec. 25, Twn. 31S., Rng. 9W.
#H	Sec. 28, Twn. 31S., Rng. 9W.
#I	Sec. 24, Twn. 31S., Rng. 9W.
#J	Sec. 14, Twn. 31S., Rng. 9W.

Quarry “C” is in a riparian reserve. However, rock has been extracted recently from this quarry; little to no vegetation is present within the quarry. Quarry “F” has not been used recently and is partly re-vegetated. The east half of this quarry is in a Riparian Reserve. Only the west half of this quarry would be used. None of the other quarries are located within a riparian reserve. Quarry “J” is on private land and it is unknown whether it is located within a riparian area. In addition, quarries “H” and “I” are on private land. Some blasting may be necessary in these quarry locations.

2.3.3 Alternative 1

Under Alternative 1 (No Action Alternative), proposed management actions would not take place at this time. This Alternative would not meet the purpose and need of the project (described in chapter 1) of harvesting timber and implementing the Medford Resource Management Plan. Since these lands are designated as northern general forest management areas in the RMP, timber harvesting would likely occur in the future through a separate environmental analysis.

2.3.4 Alternative 2

Alternative 2 emphasizes timber harvesting while meeting the objectives of both general forest management areas and the elk management areas. Approximately 218 acres would be harvested by either regeneration harvest (53 acres), selective cut (12 acres), or commercial thin (153 acres). Approximately 33 acres would be yarded with tractor, 143 acres by cable and 42 acres by helicopter. It is estimated that 40 miles of existing roads would be renovated and approximately 1.65 miles of temporary roads would be built. For Regeneration Harvest (RH) and Overstory Removal (OR) harvest units, six to eight large diameter (20"+ diameter at breast height) conifers would be left per acre. These conifer trees would be selected proportional to the existing species composition and equally across all 20"+ diameter classes present. In addition, two large hardwood trees per acre would be retained. The 218 acres harvested would be treated for fuels as described in Table 2-2.

A gate would be installed on road 31-9-26 that would reduce vehicle access to approximately 1.6 miles of roads. No permanent road construction would occur under this Alternative.

2.3.5 Alternative 3

Alternative 3 is similar to Alternative 2 but emphasizes minimizing hydrologic effects, specifically in the transient snow zone, while meeting the objectives of both GFMA and the Elk Management Area. See Alternative comparisons under Table 2-3 and 2-6. Commercial thinning, within the transient snow zone, would maintain at least 60% canopy closure in this Alternative (units 15-2, 17-1b, and 23-4). Unit 15-2 would harvest 11 less acres than alternative 2 and would not contain 10 acres of group selection. Harvested units would also be treated for slash as in Alternative 2. Road treatments would be the same as Alternative 2. A summary of the proposed action Alternatives is presented in Table 2-3

Table 2 - 2. Summary of post-harvest fuels management/site preparation units for the Action Alternatives

Unit Number	Acres	Type of Treatment*				
		Slashing	Hand Pile	Pile Burn	B.Burn	UBurn
11-1	4	X	X	X		X
15-2	95	X	X	X		X
17-1a	5	X	X	X		X
17-1b	9	X	X	X		X
23-1	20	X	X	X		X
23-2	7	X	X	X		X
23-4	6	X	X	X		X
27-2a	1	X	X	X		X
27-2b	8	X	X	X		X
27-3B	3	X	X	X		X
27-3C	1	X	X	X		X
27-4	3	X	X	X		X
27-6	2	X	X	X		X
27-9	2	X	X	X		X
33-1	42	X	X	X		X
33-2a	5	X	X	X		X
33-2b	5	X	X	X		X
Total Acres:	218					

Table 2 - 3. Action Alternatives Harvest Treatments

Unit Number	Alternative 1 No Action	Alternative 2	Alternative 3
11-1	----	GS Cable, 4 ac	GS Cable, 4ac
15-2	----	CT / GS (10 - 1 ac openings) Cable 84 ac. Helicopter 11 ac	CT (60% canopy) Cable, 84 ac
17-1a	----	GS Helicopter, 5 ac	GS Helicopter, 5 ac .
17-1b		CT Helicopter, 9 ac	CT (60%canopy) Helicopter, 9 ac

Unit Number	Alternative 1 No Action	Alternative 2	Alternative 3
23-1	----	OR Helicopter, 10 ac Tractor, 10 ac	OR Helicopter, 10 ac Tractor 10 ac.
23-2	----	SC Cable, 7 ac	SC Cable, 7 ac
23-4	----	CT Tractor, 4 ac Cable, 2 ac	CT (60% canopy) Tractor, 4 ac Cable, 2 ac.
27-2a	----	RH Cable, 1ac	RH Cable, 1 ac
27-2b	----	CT/RH Cable, 8 ac	CT/RH Cable,8 ac
27-3b	----	OR Cable, 3ac	OR Cable, 3ac
27-3c	----	OR Cable, 1ac	OR Cable, 1ac
27-4	----	OR Tractor, 2 ac Cable 1 ac	OR Tractor, 2 ac Cable 1 ac.
27-6	----	GS Tractor, 2 ac	GS Tractor, 2 ac
27-9	----	CT Cable, 2 ac	CT Cable, 2 ac
33-1	----	CT Cable, 19 ac. Tractor, 20 ac. Helicopter, 3 ac.	CT Cable, 19 ac. Tractor, 20 ac. Helicopter, 3 ac.
33-2a	----	CT Cable, 5 ac	CT Cable, 5 ac
33-2b	----	SC Cable, 5 ac	SC Cable 5 ac

Table Definitions:

- SC = Selection Cut = removes 40% of RH / OR volume
- GS = Group Selection Cut = approximately 1 acre harvest openings

Table 2 - 4. Alternative 2 and 3 - Management for Existing Roads.

Road Number	Road Name	Length (mi)	Surface Type	Proposed Action
31-8-31 A,B,D,G	Elk Valley Road	6.76	asc	Renovation
31-8-31 C,E,F	Elk Valley Road	3.1	abc	Renovation
31-9-10.A	Panther Ridge	0.91	nat	Renovation
31-9-11.0A,B	Upper Six Mile Ridge	1.33	abc	Renovation
31-9-11.4	Six Mile Saddle	0.20	Nat	Renovation
31-9-20.0	Gold Mountain Road	1.20	Nat	Renovation
31-9-21A	Gold Mountain Spur	0.70	Prr	Renovation
31-9-21 B,C		1.06	Prr	Renovation
31-9-22.0A1	Gold Mountain Road	0.87	Prr	Renovation
31-9-22.0A2	Gold Mountain Road	0.40	Prr	Renovation
31-9-22.0B	Gold Mountain Road	0.36	Prr	Renovation
31-9-22.0C	Gold Mountain Road	0.70	Prr	Renovation
31-9-22.0D1	Gold Mountain Road	0.54	Prr	Renovation
31-9-22.0D2	Gold Mountain Road	0.03	Grr	Renovation
31-9-22.0D3	Gold Mountain Road	0.28	Prr	Renovation
31-9-22.0E	Gold Mountain Road	0.20	Nat	Renovation
31-9-23.0	Panther Ridge Mainline	1.06	Prr	Renovation
31-9-23.1	Panther Ridge P1 Spur	0.62	Prr	Renovation
31-9-23.6	Ridge Top Fork	0.63	Nat	Renovation
31-9-25.1A	Upper Panther Creek	1.14	Prr	Renovation
31-9-25.1B	Upper Panther Creek	2.32	Nat	Renovation
31-9-25.1C	Upper Panther Creek	0.30	Nat	Renovation
31-9-25.1D	Upper Panther Creek	0.68	Nat	Renovation
31-9-25.1E	Upper Panther Creek	0.30	Nat	Renovation
31-9-26.0A	Panther Peak	0.57	Prr	Renovation

Road Number	Road Name	Length (mi)	Surface Type	Proposed Action
31-9-26.0B	Panther Peak	1.65	Grr	Renovation/ Gate
31-9-27.0A	Panther Creek	1.34	Asc	Renovation
31-9-27.0B	Panther Creek	0.15	Asc	Renovation
31-9-27C		0.17	Nat	Renovation
31-9-27D		1.62	Nat	Renovation
31-9-27.1A,B,C	Panther Creek Sale Road	1.11	nat	Renovation
31-9-27.4		0.14	Nat	Renovation
31-9-35 Spur #1		0.5	Nat	Renovation
32-8-1.1D1,D2	West Fork Cow Creek	4.50	Asc	Renovation
31-9-16 Plum Cr.	Plum Creek Tie Through	0.23	Nat	Renovation
31-9-15	East Panther Creek	0.32	Prr	Renovation
31-9-10.1	Panther Creek Spur Rd.	0.90	Prr	Renovation
31-9-15-1	Panther Creek P1 Spur	0.23	Nat	Renovation
31-9-27.6	Swanee	1.2	Prr	Renovation

Renovation is bringing the road back to its original state (ie. brushing, culvert replacement, blading and shaping)

Asc: aggregate surface course
Grr: grid rolled rock
Prr: pit run rock

Nat: native surface
Abc: aggregate base course
Bst: bituminous surface treatment

Table 2 - 5. Alternatives 2 and 3 Temporary Road Construction

Access to Unit	Road type	Length, mi.	Control	Surface Type
Unit 11-1	2 spurs	0.18	BLM	nat
Unit 15-2	2 spurs	0.64	BLM	nat
Unit 23-4	2 spurs	0.20	BLM	nat
Unit 27-3	1 spur	0.06	BLM	nat
Unit 33-1	3 spurs	0.41	BLM	nat
Unit 33-2	1 spur	0.07	Superior	nat
Unit 33-2	1 spur	0.09	BLM	nat
Total miles		1.58	BLM	
		0.07	Superior	

Table 2 - 6. Summary of Specific Harvest Features by Alternative

	Alt.1 – No Action	Alt. 2	Alt. 3
Number of units	---	17	17
Acres of RH	---	5	5
Acres of OR	---	27	27
Acres of SC	---	12	12
Acres of GS	---	21	11
Acres of CT	---	153	152
Total acres of harvest	---	218	207
Total net volume (mbf)	---	3-4 mmbf	3-4 mmbf
Acres			
- tractor	---	33	33
- cable	----	143	143
- helicopter	---	42	31
total		218	207
Roads			
- renovate (mi.)	---	40.3	40.3
- new temp (mi)	---	1.65	1.65
- new perm (mi)	---	0	0
- decommission (mi)	---	0	0
- drainage improvement (mi)	---	0	0

RH = Regeneration Harvest GS = Group Selection Harvest CT = Commercial Thinning
 OR = Overstory Removal SC = Selection Cut

Note: Road miles include BLM and non-BLM roads.

Chapter 3 – Affected Environment

3.1 Introduction

This chapter describes the existing resource components within the proposed Willy Slide Planning Area that might be affected by each of the Alternatives. The information in this chapter would serve as a general baseline for determining the effects of the Alternatives under the Environmental Consequences (Chapter 4) section of this document.

3.2 Location

The location of the Proposed Action

Analytical Watershed (fifth field):	West Fork Cow Creek
Planning Area (sixth field watershed):	Walker/ Gold Mountain/Panther
County:	Douglas
Legal Description:	T31S, R9W, Sec. 11, 12, 13, 15, 16, 17, 20, 21, 22, 23, 24, 25, 27, 33, 35, 36

The Planning Area is located within the Glendale Resource Area, Medford District of the Bureau of Land Management and approximately 18 air miles northwest of the town of Glendale, Oregon. Elevations range from 1,600 feet along West Fork Cow Creek in section 27 to nearly 3,000 feet in section 23. Primary drainages within the Planning Area include West Fork Cow Creek and several of its seventh-field tributaries: Panther Creek, Walker Creek and Gold Mountain Creek. The West Fork Cow Creek Watershed is listed as a Tier 1 Key Watershed under the Northwest Forest Plan (NFP)

The Planning Area contains BLM and private timber company lands intermingled in a checkerboard pattern. Forest conditions on both ownerships have been extensively altered by timber harvest over the last 40 to 50 years, particularly on private lands. Riparian areas as well as uplands have been affected

Table 3 - 1 Critical Elements by Alternative. The following elements of the human environment are subject to requirements specified in statute, regulation, or executive order and must be considered in all EAs (BLM NEPA Handbook [H-1790-1]).

Resource or Issue Affected by Alternative	Alternative (Y or N)			Resource or Issue Affected by Alternative	Alternative (Y or N)		
	1	2	3		1	2	3
Air Quality	N	Y	Y	Threatened & Endangered Species	N	Y	Y

Resource or Issue Affected by Alternative	Alternative (Y or N)			Resource or Issue Affected by Alternative	Alternative (Y or N)		
	1	2	3		1	2	3
Area of Critical Environmental Concern (ACEC)	N	N	N	Wastes, Hazardous/Solid	N	N	N
Cultural	N	N	N	Water Quality	Y	Y	Y
Farmlands, Prime/Unique	N	N	N	Riparian Zones	N	Y	Y
Flood plains	N	N	N	Wild & Scenic Rivers	N	N	N
Native American Religious Concerns	N	N	N	Wilderness	N	N	N
Invasive Species	Y	Y	Y	Environmental Justice	N	N	N
Energy	N	N	N				

(Y) = yes, the resource is present and affected. (N) = the resource is not present or affected

*Non-Critical Element

3.3 Fire and Fuels

3.3.1 Fire History

Fire is recognized as a key natural disturbance process throughout Southwest Oregon (Atzet and Wheeler, 1982). Human-caused and lightning fires have been a source of disturbance to the landscape for thousands of years. 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. Fire has played an important role in influencing successional processes. Large fires were a common occurrence in the area based on fire scars and vegetative patterns and were of varying severities.

In the early 1900s, uncontrolled fires were considered to be detrimental to forests. Suppression of all fires became a major goal of land management agencies. From the 1950s to present, suppression of all fires became efficient because of an increase in suppression forces and improved techniques. As a result of the absence of fire, there has been a build-up of unnatural fuel loadings and a change to fire-prone vegetative conditions.

Based on calculations using fire return intervals, five fire cycles have been eliminated in the southwest Oregon mixed conifer forests that occur at low elevations (Thomas and Agee 1986). Species, such as ponderosa pine and oaks, have decreased. Many stands, which were once open, are now heavily stocked with conifers and small hardwoods which have changed the horizontal and vertical stand structure. Surface fuels and laddering effect of fuels have increased, which has increased the threat of crown fires which were once historically rare.

Many seedling and pole size forests of the 20th century have failed to grow into old-growth forests because of the lack of natural thinning once provided by frequent fire. Frequent low intensity fires serve as a thinning mechanism, thereby, naturally regulating the density of the forests by killing unsuited and small trees. Consequently, much old-growth forest habitat has been lost along with diminished populations of old-growth dependent and related species.

Fire history recorded over the past 20 years in Southwest Oregon indicate a trend of more large fires which burn at higher intensities in vegetation types associated with low-severity fire regimes and moderate-severity fire regimes. This trend is also seen throughout the western United States. Contributing factors are the increase of fuel loading due to the absence of fire, recent drought conditions, and past management practices.

3.3.2 Fire Risk

Risk is the probability of when a fire would occur within a given area. Historical records show that lightning and human caused fires are common in the Planning Area. Activities within this area such as dispersed camp sites, recreational use, and major travel corridors add to the risk component for the possibility of a fire occurring from human causes. The time frame most conducive for fires to occur is from July through September.

Information from the Oregon Department of Forestry database from 1967 to 2003 show a total of 38 fires occurred throughout the Planning Area and burned a total of 425 acres. Lightning accounted for 61 percent of the total fires and human caused fires accounted for 39 percent.

The following table (**Table 3-2**) is a break down of the fires within the Planning Area:

Table 3 - 2. Wildfires within the Planning Area.

Total Number of Fires	Size Class
23	A (<.25ac)
12	B (.26-10ac)
2	C (10.1-100ac)
0	D (100.1-300ac)
1	E (300.1-1000ac)

The class E fire was 365 acres in size and was human caused. The two class C fires were 13 and 15, acres in size. One of these fires was human caused and the other by equipment.

3.4 Air Quality

3.4.1 Smoke from Prescribed burning

Smoke produced from prescribed burning is the major air pollutant of concern. Fuels management activities generate particulate pollutants in the process of treating natural and activity related fuels. Smoke from prescribed fire has the potential to effect air quality within the Planning Area as well as the surrounding area.

The National Ambient Air Quality Standards (NAAQS), set by the authority of the Clean Air Act (CAA), cover six “criteria” airborne pollutants: lead, sulfur dioxide, carbon monoxide, nitrogen oxides, ozone and particulate matter. The lead and sulfur content of forest fuels is negligible, so these two forms of air pollution are not a consideration in prescribed burning.

Particulate matter smaller than 10 micrometers (PM 10) is a term used to describe airborne solid and liquid particles. Because of its small size, PM 10 readily lodges in the lungs, thus increasing levels of respiratory infections, cardiac disease, bronchitis, asthma, pneumonia, and emphysema.

3.4.2 Smoke Aloft

Until recent decades, the impact of the lifted portion of smoke was ignored because it seemed to “just go away.” These impacts are generally not realized until the mechanisms of dispersal bring the dispersed smoke back to ground level. Because the smoke has already dispersed over a broad area, the intensity of ground-level exposure is minimal. The duration of exposure may include the better part of a day, however, and the area of exposure may be large.

3.4.3 Ground Level Smoke

Unlike smoke aloft, the potential for ground level smoke to create a nuisance is immediate. This part of the smoke plume does not have enough heat to rise into the atmosphere. It stays in intermittent contact with the human environment and turbulent surface winds move it erratically. Also in comparison to smoke aloft, human exposure is more intense, relatively brief (a few hours) and limited to a smaller area. Smoke aloft is already dispersed before it returns to the human environment while ground level smoke must dissipate within that environment. Dissipation of ground level smoke is accomplished through dispersion and deposition of smoke particles on vegetation, soil and other objects.

3.4.4 Non-attainment Areas

The population centers of Grants Pass, Medford/Ashland (including Central Point and Eagle Point), and Klamath Falls in the past were in violation of the national ambient air quality standards for PM 10 and are classified as non-attainment for this pollutant. The Willy Slide Planning Area is not within a non-attainment area.

3.5 Cultural Resources

The cultural resource survey was completed in 1999 and no new archaeological sites were discovered. The State Historical Preservation Office (SHPO) signed the clearance/tracking form for this Planning Area.

3.6 Noxious Weeds

Noxious weeds appear to be a minor problem in the Planning Area. A few individual scotchbroom plants have been observed in or near the Planning Area: one on the 31-9-27.5 road just south of its junction with the 31-9-27.1, and two on the 31-9-22 road south of its junction with the 31-9-21. All occurrences are on BLM lands. Casual observations have revealed no other noxious weeds.

3.7 Port-Orford-cedar

Port-Orford-cedar has not been located in any of the proposed units. Unit 33-4 was deferred because of the presence of Port-Orford-cedar.

Port-Orford-cedar is present along road 31-8-31 in T31S-R09W-Sec 12, and one seedling was located along road 31-9-27 in T31S-R09W-Sec. 27. The trees located along road 31-8-31, are within a ½ mile section of the road and are scattered seedlings and saplings less than 6" DBH, in draws and within 50 feet of the road edge. There is no evidence of Port-Orford-cedar root rot disease, *Phytophthora lateralis*, in any of the units along the roads mentioned above. The Planning Area is not within an uninfested 7th field watershed as defined in attachment 1 of the ROD for the FSEIS for Management of Port-Orford Cedar in Southwest Oregon.

3.8 Threatened, Endangered, Special Status Wildlife and Habitat

3.8.1 Northern Spotted Owl (Threatened)

Five spotted owl sites (Cow Elk, Gold Mountain, Gold Mountain West, Knee Deep, and Wall Walker) are within the Planning Area. Two 100-acre core areas on matrix land (Cow Elk and Gold Mountain) have been designated for sites identified prior to the signing of the NFP, in

sections 15 and 21. Known owl sites found after the signing of the NFP did not receive the core areas. Recent surveys in Knee Deep and Wall Walker owl sites indicate that these two sites have been alternately used by the same owls, and that Knee Deep is not an independent site. Cow Elk, Gold Mountain, and Wall Walker have been known to utilize other alternate nesting areas. These 100 acre core areas, and for sites found after the NFP, the site center most frequently used, are the site centers referred to in the EA. Not all owl sites are visited to protocol every year (USDI/USDA 2003, p. 72). Table 3-3 shows visit effort and owl status determination for 2000-2004.

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

Owl Site	2000	2001	2002	2003	2004
Cow Elk Alternate Site (100 acre core)	Pair Nested at original site Reproduction unknown	Pair Nested 1 Juvenile	1 visit No response	1 visit No response	Pair Nested
Gold Mountain	No response	No response	1 visit No response	Not monitored	Not monitored
Gold Mountain West Alternate Site (BLM)	Not monitored	Pair Nested No juveniles	Female response	Not monitored	Not monitored
Wall Walker (100ac core)/Knee Deep*	No response	Pair Nested 1 Juvenile	Female	Not monitored	Nesting pair

* These sites have been alternately used by the same owls

3.8.2 Northern Spotted Owl Critical Habitat

Unit 33-1, 33-2a, 33-2b, fall within Critical Habitat Unit OR-67. Sixty-eight percent of this CHU falls within the Northwest Coast and Fish Hook/Galice LSRs. It provides a portion of the link from the Klamath Mountains Province to the southern end of the Oregon Coast Ranges Province. It helps support the western end of the Rogue-Umpqua portion of the Interstate-5 Area of Concern which connects the southwest edge of the Oregon Cascades Province to the Klamath Mountains Province (USDI/USDA 2003, BA p. 51).

3.8.3 Marbled Murrelet (Threatened)

The Willy Slide PA is within marbled murrelet Zone B but is 10 kilometers east of the known range of the marbled murrelet (Zone A). Required surveys were completed without detections for marbled murrelets. There have been numerous surveys done within the West Fork Cow Creek Watershed, and over 600 surveys in the Glendale RA, without detections. This indicates that marbled murrelets do not occur in the area.

3.8.4 Marbled Murrelet Critical Habitat

Marbled Murrelet Critical Habitat coincides with the LSR designation in section 33. A portion of unit 33-2a (less than 1 acre) overlaps the marbled murrelet critical habitat (MMCH).

3.8.5 Fisher (Bureau sensitive, Federal Candidate)

The U.S. Fish and Wildlife Service (USFWS) listed the West Coast distinct population segment of the fisher under ESA in 2004, as warranted but precluded due to other USFWS priorities. (Federal Register April 8, 2004). The document further discloses that extant fisher populations in Oregon are restricted to two disjunct and genetically isolated populations in the southwestern portion of the State: one in the northern Siskiyou Mountains of southwestern region and one in the southern Cascade Range. The fishers in the Siskiyou Mountains near the California border are probably an extension of the northern California population. Fishers in the northern Siskiyou Mountains in Oregon are believed to represent the northern extent of indigenous fisher populations in the Pacific states. Causes of historical population declines in the Pacific states include overtrapping, predator control, and loss of habitat from logging and urban and agricultural development. Dispersal of fishers is thought to be restricted by large rivers and wide highways. There are no known (recent) sightings in the Glendale RA. Since the nearest known sighting, near Galice, OR, is approximately 20 miles southeast, it would indicate that suitable habitat may occur in the Glendale RA.

Ongoing surveys in the Glendale Resource Area are being done. As of this time, remote camera surveys initiated to protocol (Zielinski 1995) thus far failed to detect this species in the West Fork Cow Creek watershed.

3.8.6 Northern goshawk (Bureau Sensitive)

There are no known goshawk sites within the Planning Area. Surveys conducted in the WFCC watershed have not found any. Although suitable habitat occurs, breeding populations are not expected to occur in the area. Breeding does occur in the coast range, and western Douglas County, but occurrences are fairly rare. Key features of goshawk nesting habitat are mature forest with considerable canopy closure, but the bird is considered a forest generalist, and the habitat type and structure used varies across its range. Potential goshawk nesting habitat is present in all harvest units, except for units 11-1 and 23-2 which may be too narrow and isolated. The Alternatives are not expected to adversely effect goshawk populations. The NFP FSEIS projects 100% likelihood of providing sufficient habitat well distributed, when measured against historical distribution across federal land within the NFP (FSEIS p. 3&4-179). BLM's assumption is that the ROD (1994) would accommodate the habitat requirements of the northern goshawk.

3.8.7 Tailed frog (Bureau Assessment)

The tailed frog is documented in Wallace Creek and probably occurs in other perennial streams and late successional forested areas in section 33. It is expected to occur within the WFCC, and it is known to occur in adjacent watersheds. It is expected to occur in perennial high gradient streams with cobble, boulders, large down wood, high canopy closure, within late-successional habitat. The proposed project is not expected to affect it.

3.8.8 Foothill yellow legged frog (Bureau Assessment)

This species is not known to occur in the Planning Area. It is expected to occur within the WFCC, and it is known to occur in adjacent watersheds. It is expected to occur in main streams with rocky, gravelly, or sandy bottoms, and ponds. The proposed project is not expected to affect it.

3.8.9 Northwestern pond turtle (Bureau Sensitive)

This species is not known to occur in the Planning Area, It is expected to occur within main streams of the WFCC, and it is known to occur in adjacent watersheds. The proposed project is not expected to affect it.

3.8.10 Northern red-legged frog (Bureau Assessment)

This species is not known to occur in the Planning Area. It may occur within the WFCC. It is not documented in adjacent watersheds within the Glendale Resource Area. It is expected to occur in along streams, ponds, marshes, and adjacent woodland areas. Adult red-legged frogs may be found outside of riparian reserves. The proposed project is not expected to affect it.

3.8.11 Fringed Myotis (Bureau Assessment)

Habitat for this species is not well known but it generally uses late-successional forests. Key habitat features for forest dwelling bat species are (1) summertime roosting strata for night and day use, (2) foraging areas that harbor preferred food items, and (3) wintertime roosting strata for hibernation by non-migrants. Informal observations indicate that summer roosting habitat for forest-associated bats - e.g. dead or live trees with thick bark, deformity, or cavities - is present in the proposed harvest units, but the amount adjacent to those units or within the entire watershed is unknown.

3.8.12 Townsend big eared bat (Bureau Sensitive)

There are no adits, mines, or caves within the Planning Area, and therefore this species is not expected to be affected by this project.

3.9 Wildlife

3.9.1 Roosevelt Elk

Concentrations of Roosevelt elk are found on Panther Ridge and upper Walker Creek. While any vegetated area having less than 60 percent combined canopy closure of trees and tall shrubs counts as an elk forage area, high quality forage is found in meadows and recent clearcuts. Private lands account for much of this habitat component in the Planning Area, but forage on those former cutover lands is losing palatability, digestibility, and nutrition as the young tree canopy closes. Elk optimal cover (late successional forest) occurs sporadically within the Planning Area and mostly on BLM ownership in the LSR, riparian reserves, 100 acre owl cores, connectivity/diversity blocks and the Bobby Creek RNA. Most of the matrix late successional forest in the Planning Area are small and range 5 to 40 acres in size. Elk thermal cover is common on BLM ownership, but much less prevalent on private land where cutover stands haven't yet grown to the qualifying 40-foot height. Elk hiding cover is abundant across the entire Planning Area.

3.9.2 Connectivity/Late Successional Forest

Approximately 16,300 acres (including modified stands) of the 27,100 acres of BLM administered lands (within the 55,800 acre West Fork cow Creek watershed) are considered to be late successional forests.

An objective of forestlands managed under the Medford RMP is to maintain a minimum of 15 percent of the federal land base in a late successional condition. While the West Fork Cow Creek fifth-field watershed as a whole maintains roughly 55 percent of the federal land base in late successional conditions (Table 2-5, West Fork Cow Creek Ecosystem Analysis, USDI, 1997), the percentage for the Gold Mountain/Panther/Walker sixth-field watershed appears to be much lower.

Stands with tree densities too high for optimum tree growth are present throughout the Planning Area. Such stands include units 15-2, 17-1b, 23-4, 27-2b, 27-9, 33-1, and 33-2a (commercial thin units). These stands range from 60 to 100 years old. Portions of 15-2 were thinned in 1994, however the previous thinning was very light in much of the unit and the overstories have closed in much of the unit.

Units 11-1, 17-1a, 23-1, 23-2, 27-3b&c, 27-4, 27-6, 33-2b (regeneration and selection cut harvest units) have a variety of densities, ages, and conditions. Overstory canopy closures range from 30%-80%, with some areas exhibiting mortality of older trees. Understories have variable densities of conifer regeneration, but are generally low in stocking densities of conifers.

3.10 Special Status Plant Species and Habitat

3.10.1 Vascular Plants

Vascular plant surveys were conducted in the spring of 1999, and nonvascular surveys were conducted during the spring of 2003. The following species were found during surveys.

Fritillaria gentneri, *Limnanthes flocossa* ssp. *grandiflora*, *Arabis macdonaldiana*, and *Lomatium cookii* are listed as Endangered under the Endangered Species Act. *Fritillaria gentneri* has been found in the Glendale Resource Area, and the Planning Area is within its range, as determined by the US Fish and Wildlife Service. However, it was not found in the timber sale surveys. The three remaining species, *L. flocossa* ssp. *grandiflora*, *Arabis macdonaldiana*, and *L. cookii* have not been found in the Glendale Resource area, and their ranges, as determined by the USFWS, do not extend into this geographic vicinity.

Bensoniella oregana is a Bureau Sensitive species which is found in semi open-canopied moist habitats. This species does not require an interior forest microclimate or old growth conditions.

Carex gynodynamis is a Bureau Assessment species which typically inhabits moist habitats occurring within a mature conifer canopy.

Allium bolanderi var. *mirabile* is a Bureau Tracking species and does not require protection. This species often grows on relatively barren sites, as well as in forested areas which exhibit a sparse understory layer.

3.10.2 Non-vascular Plants – Lichens, Bryophytes and Fungi

Surveys were completed in the spring of 2003 for lichens and bryophytes using existing protocols. The following non-vascular plant species were found within the Planning Area.

Table 3 - 4. Non-Vascular Plant Species and Status.

Species name	Status	Habitat
<i>Fissidens grandifrons</i>	BTO	On larger rocks in streambeds
<i>Funaria muhlenbergii</i>	BAO	Rock outcrops
<i>Tortula subulata</i>	BTO	Stump bases
<i>Tripterocladium leuocladulum</i>	BAO	On soil, rock, or trees.

Primary plant groupings within the Planning Area include the Douglas-fir/tanoak-madrone and mixed conifer/madrone-deciduous brush/salal groupings. Special and unique habitats such as meadows, cliffs, and caves are very rare or absent, but talus occurs sporadically under the forest canopy.

3.11 Coarse Woody Debris

Table 3-5 provides existing levels of coarse woody debris.

Table 3 - 5. Coarse Woody Debris by Decay Class and Unit

Willy Slide CWD (by condition class in total linear feet per acre)						
Unit	Class 1	Class 2	Class 3	Class 4	Class 5	ROD
11-1	-	-	526'	175'	-	-
15-2	97'	3445'	1456'	2232'	1504'	49'
17-1	-	263'	614'	877'	350'	-
23-1&4	68'	68'	682'	273'	341'	68'
23-2	-	-	912'	-	-	-
27-2	-	275'	551'	629'	511'	157' \pm 30%
27-3	-	-	-	586'	195'	-
27-4	342'	342'	684'	342'	684'	-
27-5*	-	-	1026'	342'	-	-
27-6	-	608'	760'	304'	-	304'
33-1		91'	152'	395'	395'	30'
33-2	-	-	147'	441'	147'	-

* Unit 27-5 was absorbed into 27-4.

The ROD guidance column indicates how many linear feet of coarse woody debris exist, that is 16" diameter or greater and 16' or greater in length, and also in decay class 1 or 2.

3.12 Fish/ Streams/ Riparian Habitat/Soils

3.12.1 Watershed Condition

The BLM manages 47% of all acres within the mixed ownership Planning Area boundaries. Most units are located in the 7th field sub-watersheds of Gold Mountain, Panther and Walker

Creek (fish-bearing streams). However, a few units are in small frontal drainages that border the mainstem of West Fork Cow Creek.

The Medford Change Detection Program (using satellite imagery) provided forest canopy disturbances during the period from 1974 to 2002. Estimates are that most vegetation within the Planning Area is functioning within their hydrologic potential because 73 to 80% are at least 28 years of age. Vegetation is considered to be in an advanced stage of hydrologic recovery 20 years after disturbance and substantially complete by age 30 (Harr 1989; Jones 2000). However, when numerous other factors are considered (i.e. water quality, stream habitat, channel condition, flow characteristics and other watershed features), the 6th field watersheds are functioning below potential (potential-at-risk), primarily because of past and current human activity (Appendix A).

Many of the private lands were tractor logged within the last 50 years contain compacted soils and are eroding. Tractor logging and log hauling from private lands often occurs throughout the year and produces stream sedimentation, especially during winter months. It is expected that ground disturbance on private lands would continue.

Much of the recent timber harvest activity (Table 3-6) on private lands has been within the transient snow zone. Forty percent of the Planning Area is within the transient snow zone. The transient snow zone is generally considered lands above approximately 2,500 feet in 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 similar sized watersheds at lower elevation where precipitation usually falls as rain, rather than snow. Watershed acres less than 30 years of age (generally due to wildfire or timber harvest) as well as road density and stream channel condition are used to evaluate the risk for rain-on-snow events. The effects might cause streambank erosion and subsequently degrade habitat for salmonids and other aquatic species.

In considering changes to vegetation within the past 30 years, twenty three percent (3,807 acres) of all lands in the 16,376 acre Gold Mountain HUC 6 have been logged or burned to various degrees since 1974. Of these 3,807 disturbed acres, 65% (2,469 acres) are less than 18 years of age. The 2,469 acres comprise 15% of all acres in the HUC 6 and are in various stages of regrowth and hydrologic recovery. Logging activity has been especially intense within the Panther Creek and Gold Mountain Creek drainages. Logging on private lands has been in accordance with State of Oregon Forest Practice Rules but are not regulated by the Northwest Forest Plan, which provides additional guidelines to meet needs of aquatic and riparian ecosystems. However, cumulative watershed conditions consider both private and BLM administered lands.

Table 3 - 6. Year and acreage of vegetation disturbance (fire, timber harvest, etc.) within the Walker/Gold Mountain/Panther HUC 6.

Disturbance Period			
Year of comparison satellite photography	Years since disturbance	Gold Mountain Creek HUC6 acres disturbed	% of acres disturbed between 1974 and 2002
1974-1984	18 to 28	1338	35
1984-1989	13 to 18	337	9
1989-1995	7 to 13	1277	33
1995-1999	3 to 9	567	15
1999-2002	0 to 3	288	8
Totals		3807	100

3.12.2 Streams and Riparian Zones

The West Fork Cow Creek HUC 5 watershed, which includes the Gold Mountain Creek HUC 6, has been designated a Tier 1 Key watershed in the Northwest Forest Plan and the Medford District BLM RMP and is an integral part of the Aquatic Conservation Strategy. Key watersheds are areas identified as being crucial for recovery of “at-risk” stocks of anadromous and resident fish species. These refugia include areas of good as well as degraded habitat. Areas in good condition are intended to serve as anchors for the potential recovery of depressed fish stocks. Areas with lower quality habitat but with potential for restoration would become future sources of good habitat upon implementation of a comprehensive watershed restoration program.

Several streams in the Planning Area are fish-bearing (Table 3-7). West Fork Cow Creek, Gold Mountain Creek, Panther Creek and Walker Creek provide habitat for Oregon Coast coho salmon (proposed ESA – listed Threatened), steelhead and cutthroat trout. Chinook salmon frequently spawn in West Fork Cow Creek several miles downstream of the Planning Area within this HUC 5 watershed. All fish habitat in the Planning Area has been degraded by timber harvest and road construction. Habitat factors across all ownerships that are probably limiting aquatic productivity and fish production include high summer water temperature, poor riparian condition, lack of large wood, poor pool quality and depth and excessive sediment in substrate. Most riparian zones in the watershed do not support the vegetation that is needed for stream and riparian integrity as described in the Northwest Forest Plan. Only thirty-six percent of riparian reserve acreage on BLM (1,566 of 4,345 acres) is greater than 80 years of age, the age at which

late successional characteristics begin to appear. The percentage is probably considerably less on private lands.

Table 3 - 7. Estimated miles of fish habitat in the Willy Slide Planning Area.

Stream Name	Miles of Fish Habitat
West Fork Cow	6.6
Gold Mountain	4.4
Panther	3.9
Walker	1.7
Wallace	0.9

The Oregon Department of Environmental Quality has listed the mainstem of West Fork Cow Creek, Elk Valley Creek below and above the confluence with East Fork Elk Valley Creek, and Slide Creek (in West Fork Cow Creek HUC 5) as water quality limited for water temperature during summer.

Of these streams only West Fork Cow Creek is within the Gold Mountain/Panther Creek HUC 6. There are no proposed harvest units adjacent to West Fork Cow Creek. High water temperatures in the mainstem West Fork Cow Creek appears to be largely due to geology, but conditions have been exacerbated on this stream and on several tributaries by excessive timber harvest in riparian areas.

3.12.3 Soils

Soils in the Planning Area are derived primarily from metamorphic sedimentary and volcanic rocks of the Dothan formation and sedimentary rocks of the Looking glass formation. Soils on ridgetops and on slopes greater than about 50% tend to have shallow soils with 4 to 24 inches of gravelly loam. These soils are often droughty and growth of vegetation is slow (less than one foot per year on conifers), depending on species. Soils on the lower 2/3 of most slopes vary in depth between 25 to >60 inches. Soil depth is less on convex slopes and greater on the concave portion. Both geologic types exhibit mass movement depositional features in the form of ancient rotational and translational blocks. Most are stable at this time and exhibit no signs of additional movement, such as jackstrawed trees and expansion cracks. Some of these areas of recent and ancient instability are associated with faults, both within the geologic types or along contacts between geologic types.

All proposed harvest units have been examined for current and potential slope stability problems by a qualified resource specialist. For instance, part of the hillside east of lower Panther Creek containing units 27-1 and portions of 27-2 were deferred from further consideration because of concerns about potential slope instability. Hillslopes within other proposed harvest units and adjacent to streams are stable and well-vegetated. Information for soils in the Planning Area was

derived from NRCS Douglas County Soil Surveys and has been ground-verified by BLM personnel.

Total (open and closed) road density is about 5 miles per square mile. Surface condition of private logging roads 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.

3.13 Visual Resources

The Willy Slide Planning Area contains a variety of natural and human-created landscape types. These include mixed conifer and hardwood forests, past and present forest clear-cuts in various stages of re-growth, steep canyons and mountain ridges, rock outcroppings, natural forest openings, streams and tributaries. Physical structures within the landscape are limited to gravel and natural surface roads. The dominate feature in this landscape is the forest covered mountains.

3.14 Recreation

The Willy Slide Planning Area has no developed recreations sites within the Planning Area boundary. Several dispersed camp sites exist throughout the area. However none of these sites are located within, or near, of any proposed units. Most of the recreational use in the Planning Area is related to seasonal hunting or driving for pleasure.

Chapter 4 – Environmental Consequences

4.1 Introduction

This chapter forms the scientific and analytic basis for comparison of Alternatives. Discussions include environmental impacts anticipated from implementation of the Alternatives, both positive and negative. It also identifies and analyzes mitigation measures, if any, which might be taken to avoid or reduce projected impacts. Discussions of the environmental consequences are site specific and might not have been fully analyzed in the *Final Medford District Proposed Resource Management Plan/Environmental Impact Statement* (RMP/EIS) and amendments. In keeping with the directives of the National Environmental Policy Act (NEPA), the discussions focus on impacts considered potentially significant. The level of detail and depth of impact/analysis are generally limited to that needed to determine whether new significant environmental effects are anticipated.

Direct, indirect and cumulative effects were considered.

Direct effects are site-specific and result from the immediate action, such as the harvest of a timber sale unit or the construction of a particular road. Direct effects are confined to a specific area such as a timber sale unit, a particular elk range, or a spotted owl site, and can be short term or long term.

Indirect effects occur at a different place or time than the proposed action.

Cumulative effects are generally not site-specific and are not readily attributable to any one action. Cumulative effects are the result of past, immediate, and reasonably foreseeable actions on a larger area, such as a watershed, regardless of ownership.

4.2 Fire and Fuels

4.2.1 Direct Effects on Fuels

Alternative 1 (No Action Alternative)

Untreated areas in all Alternatives would perpetuate current conditions and in many mature stands growth and deterioration would increase fuel loading. These conditions over time would increase the potential for a stand replacement fire within and/or adjacent to the Willy Slide Planning Area. The opportunity to reduce fire hazard would not occur under the No Action Alternative.

Action Alternatives (Alts. 2 & 3)

An array of treatments designed to reduce hazardous fuels is proposed for the Planning Area. Proposed treatments include manual methods in combination with prescribed burning. Piles would be burned in the fall to winter season after 1 or more inches of precipitation has occurred. This would reduce the potential for fire spread and scorch and mortality to the residual trees and shrubs. High soil and duff moisture would also prevent soil damage from burning.

Future underburns, after initial fuels treatments, would maintain reduced fuel levels and prevent future build-up of fuels. Typically, maintenance underburns would occur 2-7 years following the initial treatments but would be driven by the condition of the stand and re-growth of slashed vegetation

Alternatives 2 and 3 would reduce the overall density (aerial fuels), ladder fuels and surface fuels of units proposed for harvest. This would affect fire behavior by reducing flame length, fire duration and the amount of acres burned.

The existing surface fire behavior fuel model for these stands is generally represented by a Timber Group fire behavior fuel model. In the short term (10-25 years) harvest action would create greater surface fuels greater than current levels if they are not treated. It is anticipated that fuel loadings after logging would be increased by approximately 3-15 tons to the acre. This would change the existing fuel model of most of the timbered stands to a Logging Slash Group which in turn would create higher rates of spread and greater flame lengths in the event of a wildfire.

Logging slash, if not treated, would also increase the duration and intensity of a ground fire. This would cause increased mortality to the smaller diameter overstory trees. To mitigate the impacts of residual logging slash on the fuel hazard, fuels would be treated on all the acres harvested.

4.3 Air Quality

4.3.1 Direct and Indirect Effects

All Action Alternatives would affect air quality by the addition of certain pollutants (Particulate Matter [PM10] and Particulate Matter [PM2.5]). In comparison, the difference among Alternatives is very small. At these low levels there would be negligible direct or indirect effects on air quality under all Action Alternatives.

Prescribed burning would be scheduled primarily during the period starting in January and ending in early June. During this period smoke emissions are minimized because duff and dead woody fuel have the highest moisture content, reducing the amount of material actually burned. This would also reduce damage to the site from high intensity burning and to facilitate control of the units being burned. The greatest potential for smoke intrusions into the non-attainment areas

would come from underburning activities. Current avoidance strategies for prescribed fire assume that smoke can be lifted from the project site and dispersed and diluted by transport winds. However, underburning requires a low intensity burn that would not have the energy to lift the smoke away from the project site. Smoke retained on site could be transported into portions of non-attainment areas if it is not dispersed and diluted by anticipated weather conditions. Localized concentration of smoke in rural areas away from non-attainment areas may continue to occur during prescribed burning operations.

Other activities associated with underburning such as fireline construction and mop-up operations after the burn would have minimal impacts to the site. Firelines would be 1 to 2 feet in width and water barred to minimize soil erosion. Re-growth of vegetation on the firelines normally occurs within one growing season. Mop-up operations are normally limited to a 100 foot perimeter around a burned unit. Soil disturbance would be scattered in localized areas within this perimeter.

Air quality would be impacted in the event of a large wildfire. Emissions from wildfires are significantly higher than from prescribed burning. The wildfires which occurred in southern Oregon in 2002 (Biscuit Fire) emitted more particulate matter than all the burning that occurred within the state that year

4.3.2 Cumulative Effects

Untreated areas in all Alternatives would perpetuate current conditions and in many mature stands growth and deterioration would increase fuel loading. These conditions over time would increase the potential for a stand replacement fire within and/or adjacent to the Willy Slide Planning Area. All action Alternatives propose treatments to reduce fire hazard and decrease long-term adverse cumulative effects. This opportunity to reduce fire hazard would not occur under the No Action Alternative.

4.4 POC Root Disease

4.4.1 Direct and Indirect Affects

Alternative 1 (No Action)

Under the No Action Alternative, Port-Orford-cedar root disease spores could still be transported by animals, humans, or by any vehicle driving road 32-8-1.1 (West Fork Cow Creek road) during the high spore mobility periods during the wet season.

Action Alternatives (Alts. 2 & 3)

Port-Orford-cedar and *Phytophthora lateralis* (PL) is present near the West Fork of Cow Creek road, which is paved. This area along the West Fork of Cow Creek is considered to be infested.

This road is open for public travel throughout the year, however it is paved and would not accumulate mud, a viable travel source for POC spores and spread of PL.

The “Port-Orford Risk Key: Site-specific analysis to help determine where risk reduction management practices would be applied” (POC FSEIS. pp. 2-18,19) was used to determine risk for the spread of *Phytophthora lateralis* (PL) root disease on a unit by unit and road by road basis for this project (Appendix B).

Unit 33-4 was originally proposed for harvest but was deferred because POC was identified within the stand. There has been no POC located in any of the remaining units in this project. In the 2 locations where POC is present, along roads 31-8-31 in T31S-R09W-Sec 12, and one seedling near road 31-9-27 in T31S-R09W-Sec. 27, the POC at these locations, has no ecological, tribal, or product use or function that measurably contributes to meeting land and resource management objectives. The POC near the haul routes are a minor component of the stands at these locations. Loss of POC, due to infestation, in these areas would not prevent land and resource management plan objectives from being met, because the ecological conditions and forest structures would not be measurably affected by the loss of the few scattered trees in the area.

There are 3 units (11-1, 15-2, and 27-6) that would require log hauling on roads where uninfected POC has been found along. The only area of infected POC is along the West Fork of Cow Creek road, 32-8-1.1, that is paved and open to travel by the public year round. The risk of spread from driving the paved road is very remote. In an effort to keep the risk as low as possible in this project design features allow log hauling only during the dry season. Further, equipment would be washed before entering the Planning Area both to reduce the risk of the spread of PL from areas outside the project into the Planning Area and reduce the risk of spread of noxious weeds into the Planning Area.

4.4.2 Cumulative Effects

Project design features of this EA further reduce any possible risk due to the actions in this project. West Fork Cow Creek road (32-8-1.1) is near POC infected with PL but is open to travel by the general public throughout the year. This is a paved road and would not collect mud. This project has no off-road activity in this area, and hauling and harvest activities would be limited to the dry season. This project tiers to the POC EIS. There are no anticipated cumulative impacts to POC in this watershed.

4.5 Threatened, Endangered, Special Status Wildlife and Habitat

4.5.1 Effects to Spotted Owl (Threatened)

Alternative 1 (No Action)

The No Action Alternative is expected to have little impact on late-successional forest and old-growth forest associated species. Stands would continue to develop as older forest, with the effect of contributing additional large standing and downed wood. The habitat would likely be reviewed under future actions for harvesting, and possibly harvested. It would not likely support additional productive owl sites.

The lack of fuels treatments would increase the risk of stand replacement fire in older stands with existing dense timber and brush, with stands becoming denser over time. Catastrophic loss of vegetation would threaten late-successionally affiliated species which depend on these forest habitats for short-term survival, reproduction, and dispersal.

Action Alternatives (Alts. 2 & 3)

Table 4-1. Spotted Owl Sites within the Willy Slide Project Area

Spotted Owl Sites	Willy Slide units affecting owl sites within approximately .7 miles	Willy Slide units affecting owl sites within approximately 1.3 miles
Cow Elk Alternate site (100ac core)	15-2 (CT), roosting/foraging habitat	11-1, 15-2, 23-1, 23-4, 23-2
Gold Mountain	none	17-1a,b, 27-3b, 27-9, 15-2
Gold Mountain West Alternate site	none	17-1a
Wall Walker	33-1 (CT), roosting/foraging habitat 33-2a (CT), roosting/foraging habitat 33-2b (SC) roosting/foraging habitat	33-1,33-2, 33-4, 27-3, 27-4, 27-5, 27-6, 27-9

There are four spotted owl activity centers near the Planning Area: Cow Elk, Gold Mountain, Gold Mountain West, and Knee Deep\Wall Walker. Cow Elk, Gold Mountain West, and Wall Walker were established prior to the NFP and received 100 core areas. All 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.

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 both Alternatives 2 and 3, RH, GS, OR, and SC units (11-1, 17-1a, 23-1, 23-2, 27-2a, 27-2b, 27-3b, 27-3c, 27-4, 27-6, and 33-2b) would remove approximately 59 acres of suitable nesting/roosting/foraging (NRF) habitat, and approximately 49 acres would be downgraded from suitable to dispersal (units 27-9, 33-1, and 33-2a).

Commercial thinning under Alternative 2 downgrades approximately 100 more acres (units 17-1b, 15-2, 23-4) of suitable owl habitat to dispersal habitat than Alternative 3. This is because Alternative 3 retains 60% canopy compared to approximately 40% canopy under Alternative 2. Alternative 2 also removes approximately 10 more acres of suitable owl habitat through GS in unit 15-2.

No RH or OR units are near known nesting areas of any of the known owl sites within the PA. Effects from the Action Alternatives are mostly the reduction of suitable habitat in the outer perimeters of most of the known owl 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.

All of the Action Alternatives are expected to adversely affect northern spotted owls. 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 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 59 acres in RH, OR, GS, and SC removal units, and habitat downgrading of approximately 159 acres of suitable habitat to dispersal habitat through commercial thinning units.

Cumulative effects

Habitat fragmentation from the checkerboard arrangement of public and private land is a serious problem in the Planning Area. Almost all private land has been intensively harvested, much of it in the last few decades. It is not currently, or expected in the future to be suitable habitat. Harvesting late successional stands from past, current, and future projects would reduce the viability of some of the sites on matrix lands. The primary role of matrix lands, including 100 acre owl cores, riparian areas and other reserve areas, as connectivity blocks would provide short-term habitat (USDA/USDI 2003, BA p. 72). The reduction of suitable habitat is within the predictions of the NFP and the Biological Assessment.

4.5.2 Effects to Spotted Owl Critical Habitat

Alternative 1 (No Action)

The function of section 33 in CHU OR-67 to provide nesting, roosting, foraging, and dispersal habitat would not be substantially changed.

Action Alternatives (Alts. 2 & 3)

Unit 33-1, 33-2a, 33-2b, fall within Critical Habitat Unit OR-67. The majority of section 33 is designated LSR. Unit 33-1 and 33-2 would commercially thin 47 acres of the non-LSR portion to 40% canopy cover, and would still qualify as dispersal quality habitat. Unit 33-2b would be selectively cut, and may be harvested below 40% canopy cover, and would remove 5 acres of suitable habitat. Approximately 80% of section 33 currently qualifies as nesting, roosting, foraging, and dispersal habitat. The Action Alternatives are not expected to change the critical habitat function of this section.

Cumulative Effects

The function of CHU unit OR-67, and the overlaying LSR, riparian reserves, and matrix land, would still perform as intended, providing a supporting link between the Coast Range and Cascade/Klamath Provinces for nesting, roosting, foraging, and dispersal habitat.

4.5.3 Marbled Murrelet (Threatened)

Alternative 1 (No Action)

Marbled murrelets are not expected to occur in the PA, so Alternative 1 is expected to have no effect to this species. Potential habitat is not expected to be occupied.

Action Alternatives (Alts. 2 & 3)

Regeneration (RH), OR, GS, SC, or CT harvest in late-successional stands (except units 15-2, 27-9, and 33-1) would open forest stands currently buffering the range of the murrelet. This would result in unsuitable habitat conditions. Alternatives 2 and 3 would remove approximately 79 acres of suitable habitat. However, based on the absence of detections in the PA, previous surveys adjacent to the PA, the absence of any detections within the Medford District, and because the PA is beyond the known range of detections (Zone A), it is unlikely that the habitat is used by murrelets. The effects of the Action Alternatives are judged to be negligible.

Murrelet Critical Habitat

Alternative 1 (No Action)

No effects to critical habitat.

Action Alternatives (Alts. 2 & 3)

Unit 33-2a overlaps partially with marbled murrelet critical habitat. Approximately 1 acre would be commercially thinned. The unit currently is judged to be not suitable habitat. The portion of the unit falling within marbled murrelet critical habitat would comply with LSR guidelines. Due to the absence of any murrelet detections from numerous surveys in the area, these effects to this unit and adjacent suitable habitat within the critical habitat are considered to be negligible.

4.5.4 Fisher (Bureau Sensitive, Federal Candidate)

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.

Action Alternatives (Alts. 2 & 3)

Fishers have not been found in the Resource Area. The nearest known sighting is approximately 20 miles away near Galice but it is possible that fishers may occur or disperse near the Planning Area. Some potential den sites may be lost, or 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. These Alternatives are expected to have minor adverse impacts to the current suitability of potential fisher habitat. Alternative 2 would remove 26 acres of late successional forest through RH and GS harvest, and downgrade the suitability of 12 acres from SC units. Alternative 3 would remove 16 acres of late successional forest through RH and GS harvest, and downgrade the suitability of 12 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.

Fringed myotis (Bureau Assessment)

Alternative 1 (No Action)

Overstocked young stands growth would continue to decrease, slowing development, and risk to stand replacement fire would increase.

Action Alternatives (Alts. 2 & 3)

Alternatives 2 and 3 might remove all or most live trees suitable as bat roosts on approximately 59 acres dispersed from 11 units (11-1, 17-1a, 23-1, 23-2, 27-2a, 27-2b, 27-3b, 27-3c, 27-4, 27-6 and 33-2b) containing late successional forests, potentially reducing or redistributing local bat populations now and in the future since trees would not regrow to that size in the projected rotation age. The use of low density overstory late-successional trees (RH, SC units) for roosts is unknown, however, bats in general would use scattered and isolated large suitable trees for roosting. The above effects are not expected to destabilize existing area-wide populations.

Due to harvesting on matrix, and development of late successional forest in reserve areas is likely to slowly shift populations into reserve areas.

4.6 Wildlife

4.6.1 Elk Management

Alternative 1 (No Action)

Available quality forage would continue to be low, and be disturbed mostly on large private clearcuts, where elk are more vulnerable. Road density would remain high, and might increase due to harvesting on private lands. Late-successional forest cover would continue to be below RMP levels in the elk management area.

Action Alternatives (Alts. 2 & 3)

Roads

The amount of open access roads would decrease equally (1.6 miles) in Alternatives 2 and 3 by gating of road 31-9-26. Road density effecting elk by use of vehicles would still be high, and above the levels the RMP for elk management areas (EMA), but positive progress would be achieved through both Action Alternatives. Harassment of elk by poachers, or disturbance during calving season would be reduced with the reduced vehicle access.

Forage

Quality and sustainable elk forage on BLM land is very low, due to the absence of natural meadows, which are mostly on private ownership, and not distributed evenly. Approximately 20-30 acres of forage for elk would be provided by Alternative 2 and 3 from GS and RH harvesting (Unit 11-1, 17-1a, 27-2a, 27-3b, 27-3c, 27-6, Table 2-2), and would persist for approximately 15 years. Potentially high utilization of the forage areas could occur because of the small unit size and proximity to cover. Group selection units in unit 15-1 would introduce forest structure variability within the 95 acre unit in Alternative 2 and provide forage opportunity within it. At approximately 40% canopy cover, the unit would have reduced capability to function as thermal or hiding cover, and may be avoided, until undergrowth responds to the increased light. At this time, it may be used for foraging. Quantity and quality of elk forage within the Elk Management Area (EMA) would probably remain lower than the optimum quantities described in then RMP, due to large areas of harvesting on private which reduce the effective use forage by elk, limited harvesting on BLM, and the lack of natural meadows on BLM, and lack of maintenance of meadows on private.

Cover

Elk optimal cover (good quality late-successional habitat) is low in the elk management area. The quantity, distribution, and size of late-successional stands are less than the optimal effectiveness described in the RMP. Most of the elk management area occurs within matrix land, and as such, is subject to rotational harvests. Most late-successional forest on private has been harvested, and the remaining stands are expected to be harvested. The reduction of optimal elk cover is the same for alternative 2 and 3. Proposed units contributing to forage (see elk forage, above) are small, and the associated late-successional blocks they occur in, retain effectiveness at providing cover for elk.

Unit 23-1 and 23-2 are isolated from past harvesting, have variable canopy cover and age classes, and are likely to be currently functioning as the more abundant thermal cover, which is not limited BLM land. They are probably not used frequently or effectively due to their isolation, size, and narrow configuration. The proposed prescriptions (Table 2-3) would convert these units to function at a lower level of hiding or thermal cover. The small size, and prescriptions of unit 27-4, 33-2b, and their continuity with adjacent optimal, thermal, and hiding cover, would have marginal impacts on elk.

Commercial thin, CT/GS, and CT/RH units (Table 2-3) occur in thermal cover which is fairly abundant in the Planning Area and throughout the Elk management Area. Alternative 2 includes thinning canopy cover to approximately 40%, and includes GS units in unit 15-1 to introduce forest structure variability within the 95 acre unit, and provide forage opportunity within it. At approximately 40% canopy cover, the unit would have reduced capability to function as thermal or hiding cover, and may be avoided, until undergrowth responds to the increased light. At this time, it may be used for foraging. Commercial thinning these units is not expected to have a

substantial negative impact on elk, due to the abundance of this mid-seral age class on BLM lands, but the matrix stands would benefit from the silvicultural prescription. Commercial thin, CT/GS, and CT/RH units in Alternative 3 would be thinned less, at approximately 60%, and lack any GS units. The units would continue to function as thermal cover, which is fairly abundant on BLM land, however, the units may be entered and disturbed again for another thinning in 10 or 15 years.

4.6.2 Connectivity/Late Successional Forest

Alternative 1 (No Action)

Late-successional stands would continue to mature and provide habitat for late-successional related species. Prescriptions, such as thinning, fuels treatment within or adjacent to late successional stands would not occur and the risk from fire would be higher than the two action Alternatives. Private land would continue to harvest and isolate late successional stands on BLM by surrounding it with early seral stage habitat.

Action Alternatives (Alts. 2 & 3)

The West Fork Cow Creek 5th field watershed has approximately 27,100 acres of BLM lands. Approximately 16,300 acres of BLM administered lands (within the 55,800 acre West Fork Cow Creek watershed) are considered to be late successional forests. Under alternative 2 and 3 this acreage would be reduced by less than 1% (approximately 0.3%) of the BLM-administered portion of the watershed.

It is expected that private timber lands, where nearly all late-successional forest has already been cut, would be regularly harvested by stand age 60 and provide no future late-successional habitat (RMP/EIS p. 4-5). Because of the checkerboard pattern for government ownership, connectivity for late-successional forest associated animal species of low mobility and would remain broken within the Planning Area and reduce the effectiveness of dispersal. West Fork Cow Creek Watershed as a whole does not meet dispersal standards for northern spotted owls (USDI/USDA 2003), but harvesting within matrix and critical habitat units is not expected to preclude dispersal of owls between LSR's.

Late-successional forest stands are considered at least 80 years old, with no substantial modification from prior timber harvest and provide habitat for species closely associated with late successional forests. Some units can be modified, but have either sufficient scattered older overstory, large snags or large down wood components, or sufficient remnant older trees to be considered habitat for late-successional species. Effects from Alternatives 2 and 3 are very similar. Units 11-1, 17-1a, 23-1, 23-2, 27-2a, 27-2b, 27-3b, 27-3c, 27-4, 27-6, and 33-2b (59 acres) are considered to contain late successional stands. Under Alternative 2 approximately 11 acres (units 11-1, 17-1a, 27-6) of late successional stands would be harvested through 1 acre GS prescriptions. Approximately 36 acres (23-1, 27-2a, 27-2b, 27-3c, 27-4) would be harvested

through overstory removal or regeneration harvests. Approximately 12 acres (units 23-2, 33-2b) would be degraded through SC prescriptions under both Alternatives 2 and 3. Select cut units would retain some characteristics that would be utilized by some species, such as roosting bats and pileated woodpeckers, but would not qualify as habitat for late successional species that require dense canopy cover. Slightly less degradation would occur in Alternative 3, with 15 acres (units 17-1b and 23-4) thinned to 60% canopy cover, compared to 40% in Alternative 2.

Overstory removals would remove a portion of the competing overstory and would result in the release and increased growth of existing regeneration. Approximately 21 acres of regeneration and selection harvest units would benefit from increased stocking after planting. The commercial thinning areas are not considered to be in late-successional condition and the attainment of late-successional conditions would likely be accelerated in these stands on approximately 150 acres, as a result of thinning.

No RH or OR units occur adjacent to any 100 acre owl cores. Units 33-1, 33-2a, 33-2b are adjacent to a late successional reserve in section 33.

Cumulative Effects

Large late successional stands deferred from other recent adjacent projects were not included in the Alternatives. Units containing late-successional stands are relatively small and surrounded by young seral stage habitat, dominated by riparian reserves, or are not fully functioning as habitat for late successional species.

Past timber harvest on both federal and private lands in the north portion of the Walker subwatershed and Wilson subwatershed, has left a highly fragmented landscape which has substantively reduced both the quality and quantity of habitat. Much of this is because of the dominance of private ownership in these areas. The southern portion of Wilson and Walker subwatersheds contains more BLM ownership, and includes a late successional reserve. The two action alternatives include additional timber harvest in the area and would result in minor adverse cumulative effects. Federal ownership of late successional forest is approximately 33% (USDI 1997) of the entire watershed. The Northwest Forest Plan standards and guidelines state that at least 15 percent of fifth field watersheds should be managed to retain late successional patches (ROD, C-44). Harvest from other recent timber sales (Mr. Wilson, Bear Pen) would remove approximately 480 acres of late successional forest. The cumulative removal of late successional forest from the proposed Willy Slide Project, and these recent timber sales, is approximately 3% of late successional lands within the West Fork Cow Creek watershed.

4.7 Special Status Plant Species and Habitat

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, but are documented when found so as to better determine their status and distribution. These species do not require management or mitigation.

Microclimate measurements show that interior conditions may not be found until 100 to over 790 feet from clearcuts or agricultural fields, depending on site conditions and weather, and the variable measured (Chen 1991, Rodrigues 1998). Some of the smaller microclimate differences appear to be irrelevant to biological systems, as edge effects on biological variables, such as plant regeneration and species composition, generally average around 200 to 250 feet, with a range of 50 to 450 feet, adjacent to cleared areas (Chen 1991, Rodrigues 1998, Jules 1997).

4.7.1 Direct Effects

Alternative 1 (No Action)

Under the No Action Alternative, ecological processes would continue undisturbed.

Action Alternatives (Alts. 2 & 3)

Bureau Sensitive or Tracking Species are not found within any of the proposed treatment units under Alternatives 2 or 3. Buffers would occur around if Bureau Sensitive species are located within forested units which would be impacted by timber sale activity. In general, buffers would provide protection to special status plant populations which are found in forested habitats. These species could be impacted by timber harvest, pile burning and/or other ground disturbance, and buffers would protect interior forest microclimate at the site(s). No adverse effects are anticipated to bureau sensitive or assessment species.

Regeneration harvest units would retain about 10-15% canopy cover, lessening the depth of edge effects. Thinning prescriptions retain up to 60% canopy. Based on numbers in the literature, modified by consideration of the prescriptions, plant sites in regeneration cuts or similar cuts that retain less than 40% canopy should have 200 foot buffers, and others should be 100 feet.

Considering species associated with non-forested habitats reside within units slated for prescribed burning, buffer width would be sufficient enough to preclude hand piles from being placed directly on top of the plant(s). Burning would generally not be done in buffers, as some plants would be killed by direct heat. However, within populations of plants occurring in open areas, such as *Camassia howellii* and *Silene hookeri* var. *bolanderi*, underburning is permissible in the fall or winter, before March 15, as these plants are still dormant during this time. For nonvascular plants which occur in open areas, protection would be determined on a site by site basis, and would largely depend on the substrate involved.

If found, Bureau Sensitive species occurring in more open habitats, and which have exhibited a benign or positive response to prescribed fire activity, underburning may occur within the designated timeframe. Bureau Assessment species would be assessed on a site-to-site basis to determine buffer necessity and buffer size.

BLM Manual 6840 requires that actions on BLM lands do not contribute to the need to list Special Status Species under the Endangered Species Act. For the Special Status Species that are Bureau Tracking and Assessment, surveys and mitigation measures are discretionary.

No effects would occur to the endangered plant *Fritillaria gentneri*. No populations were found in the Planning Area.

4.7.2 Indirect Effects

The potential indirect effect pertaining to Bureau Special Status (BSS) plants is the spread of noxious weeds. If left unchecked, noxious weeds, which tend to take advantage of newly disturbed areas, would increase competition and might displace some BSS species.

4.7.3 Cumulative Effects

Cumulative effects include past activities such as clearcutting, road building, mining, and private land development, on federal and non-federal lands. These activities, particularly on private lands, have likely adversely affected special status species occurrences. Currently, no laws exist which require protection of Special Status plants on privately owned land, with the exception of public lands managed by the state and federal government. Future activities on federal and state public lands would likely conserve special status occurrences. However, unmanaged rare plant occurrences on non-federal lands would likely experience adverse effects from future land uses and development.

4.8 Coarse Woody Debris

4.8.1 Direct and Indirect Affects

The Provincial Interagency Executive Committee (PIEC) has adopted guidelines for down (course) woody material (CWD) in accordance with recommendations of the Northwest Forest Plan (NFP). The guidelines are stratified by plant association groups, with recommended quantities of down woody material for each group. This Planning Area is most closely associated with the “Douglas-fir Moist” plant grouping. The recommendations for this group are:

Decay Class	pcs. 6-9"	pcs 10-19"	pcs 20+	Lgth/pc.	Stn. Dev.	Av.Total lgth
1	1 (1)	1 (2)	0 (0)	45 ft.	(11)	90 ft
2	6 (20)	6 (16)	1 (4)	31 ft.	(21)	403 ft
3	8 (21)	8 (19)	2 (5)	29 ft.	(17)	522 ft
4	10 (21)	5 (18)	2 (7)	32 ft.	(25)	544 ft
5	2 (9)	11 (22)	1 (1)	22 ft.	(32)	308 ft

(The numbers in parenthesis are the standard deviation for each column)

The mean number of pieces, by decay class, is used as the target for coarse woody material retention. The variability around that mean is quite large, as expressed by the standard deviation, so those amounts should not be considered as absolute requirements but they are used as targets for this project.

Alternative 1 (No Action)

The functional longevity and rate of recruitment for snags and down wood would not change since stand opening or other altering activity would not occur.

Action Alternatives (Alts. 2 & 3)

Units 15-2 and 27-4 meet or exceed the mean length of downed woody material for all decay classes of the guidelines for down (course) woody material (CWD) as recommended by the Provincial Interagency Executive Committee (PIEC), “Guidelines for Snag and Down Wood Prescriptions in Southwestern Oregon, Diane White. The other units in this project are below the mean levels in one or more decay classes. These mean levels in this guideline have a large variability however, ranging from no course woody material to more than double the mean in some decay classes.

Group Selection units 11-1, 15-2, 17-1a, 27-6, consist of 1 acre openings within a larger area and the stand outside of the openings would be retained and allow for the recruitment of future downed woody material. Selection cut units 23-2 and 33-2b would retain a minimum of 10 overstory trees per acre and generally more than 10. These overstory retention trees would allow for future recruitment of downed woody material. Regeneration harvest and overstory removal units 23-1, and 27-3b&c are low in decay class 1, 2, and 4 downed woody material and 27-3b&c

is also low in decay class 5. These units would have 8-10 overstory trees retained to allow for recruitment of future woody material.

Under Alternative 2 commercial thin units 15-2, 17-1b, 23-4, 27-2a&b, 27-9, 33-1, and 33-2a would retain a minimum of 40% canopy closure and ample green trees to accommodate future downed woody material.

Under Alternative 3 commercial thin units 15-2, 17-1b, and 23-4 would retain a minimum of 60% canopy closure and ample green trees to accommodate future downed woody material. Units 27-2a&b, 27-9, 33-1, and 33-2a would retain a minimum of 40% canopy closure and ample green trees to accommodate future downed woody material.

4.8.2 Cumulative Effects

All coarse woody material currently in the units within this project would be retained. The green trees retained in all units in the project would allow for recruitment of down woody material that would meet or exceed the levels suggested in the Medford District ROD (June 1995). The level of green tree retention is also planned to meet future recruitment of the mean amounts for number of pieces and overall length of down woody material by decay class as suggested by the PIEC for the “Douglas-fir Moist” plant group, “Guidelines for Snag and Down Wood Prescriptions in Southwestern Oregon”, D. White. These numbers are not absolute amounts but a target mean by decay class, with a wide range of variability in each decay class which ranges from no coarse woody material to more than double the mean amount. It is anticipated that these amounts would allow for present and future typical levels of coarse woody material to preserve site productivity into the future, maintain nutrient cycling and soil productivity.

4.9 Fish/Streams/Riparian Habitat/Soils

4.9.1 Effects Streams and Riparian Zones

Alternative 1 (No Action)

Without road renovation planned in the Action Alternatives, 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 as under the Action Alternatives. 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. No roads would be built or decommissioned. Some roads, such as 31-9-22 would continue to degrade and contribute sediment to important salmon, steelhead and cutthroat trout streams.

Alternative 2

The current condition of aquatic habitat and watershed indicators for the Gold Mountain/Panther/Walker HUC 6 watershed would be maintained in the short and long term (Appendix A).

This Alternative would not increase water temperature or degrade riparian habitat because there would be no harvest, road construction or other activity in riparian reserves. Riparian reserves at least 320 feet wide (each side) of fish-bearing streams (unit 27-6) and a minimum of 160 feet wide on non-fishery streams would effectively prevent any loose soil, generated by timber felling and log yarding, from reaching streams.

Crossdrain culverts and rocked water dips that are added to haul roads would route most sediment-laden water off the road onto the forest floor. This sediment-laden water would be filtered of soil before eventually reaching stream channels through subsurface flow. There would be no change in road density under this Alternative. Log hauling and tractor yarding would not result in soil erosion or contribute sediment to streams because it would be limited to the dry season. Undisturbed ground at the bottom of harvest units would capture any overland flow from cable or tractor yarding routes.

Although road renovation, done on a regular basis, can prevent further degradation of aquatic habitat and improve water quality, it often contributes sediment to streams during the first major storm event during late fall. This increase of streamflow mobilizes soil that remains in the stream channel following culvert inlet cleanout or replacement. The amount of resultant stream sedimentation would be minimal because appropriate PDFs would be used (Chapter 2) to minimize the amount of disturbance. Nevertheless, there would be localized short term adverse effects on aquatic insects, amphibians and other aquatic species immediately downstream of road crossings. Levels of suspended and bedload sediment more than several hundred yards downstream of renovated roads would be indistinguishable from background levels from natural and human-caused sources. This bedload sediment would be gradually diluted by tributaries and transported downstream over an indeterminate length of time.

Construction of temporary roads under Alternative 2 would not degrade water quality and stream habitat since all of these roads would be located on or near ridgetops, on stable ground and far from any streams. Gating roads would eliminate vehicle use and potential damage to road surface during winter.

It is unlikely that harvest-related activity other than road renovation (i.e. harvest, log yarding and hauling, road gating, or site preparation) would have any measurable effect on stream sediment. This is because there is either no mechanism for any of these activities to contribute sediment to streams or using appropriate PDFs would prevent or minimize any adverse effects on streams and the biotic community.

Frequent wildfire in this watershed, followed by intense rainstorms, has historically been the primary contributor of sediment to streams in the Klamath Province (discussed in the Grave Creek Watershed Analysis, 1999). Any sediment that reaches streams as a result of this operation would be well within conditions of natural disturbance.

It is unlikely that harvest would increase peak flows during rain-on-snow events in small streams adjacent to harvest units. Riparian reserves at least 160 feet in width would tend to ameliorate any changes, any flow increase would be small and well within the range of natural variation and it would not affect streambank stability.

It is also unlikely that harvest would measurably increase peak flow at the HUC 6 scale because (a) at least 74% of all acres in the HUC 6 watershed and at least 77% of TSZ acres (Tables 4-4 and 4-5) are functioning properly from a hydrologic standpoint since the acres have not been disturbed by timber harvest or major wildlife in nearly 30 years, (b) proposed harvest units are spread across the entire HUC 6 (c) the amount of recently disturbed acres in the HUC 6 and its TSZ would increase by only 1% (d) nearly 30 percent would be commercial thin, retaining at least 40% canopy closure, rather than RH which would retain only 6 to 8 large conifers per acre. Only 28% of all proposed harvest acres are RH and none of the RH is in Gold Mountain or Panther Creek watersheds, where there has recently been extensive harvest on private lands. Effects of historic wildfire resulted in far greater acreage in open condition (no or minimal ground cover or canopy closure) and (most likely) higher peak flows in the Cow Creek watershed and Klamath Province than at present (Grave Creek Watershed Analysis, 1999). Existing stream channel capacity reflects peak flow conditions under historic wildfire regimes (Harr 1989). However, high road density can increase the magnitude and timing of peak flows beyond the range of natural variability. It is expected that canopy condition and hydrologic recovery in group selection and commercial thin units would return to baseline (pre-harvest) conditions within 5 to 10 years, OR within 10 to 15 years, select cut in 15-20 years, and within 20 to 30 years in RH units.

Table 4 - 2. Effects of Alternatives on vegetation (hydrologic functioning) condition - on all of the HUC 6 watershed acres.

HUC 6 Subwatershed	Alternative 1 (No Action – baseline)		Alternative 2		Alternative 3	
	Acres in properly functioning condition *	Percent of all HUC 6 acres	Acres in properly functioning condition **	Percent of all HUC 6 acres	Acres in properly functioning condition **	Percent of all HUC 6 acres
Gold Mountain/Panther (16,394 total acres)	12,090	74	11,893	73	11,894	73

* Landsat remote sensing technology was used to determine the percentage of the HUC 6 where openings in the forest canopy appeared (minimum resolution= 1.1 acres) between 1974 and 2002. 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; Jones 2000). Vegetation in these categories is considered to be in properly functioning hydrologic condition. (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 acres due to road construction represents approximately 3% of total acreage in the Action Area.) Openings that appeared during 1974-2002 are in various stages of hydrologic recovery. Therefore, estimated percent of acres in proper hydrologic functioning condition in are **minimums**. Percentage of acreage in non-forest openings is included in the pre- and post-harvest calculations.

** 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. CT (60% canopy retention) would have no effect on hydrologic response of small watersheds because of the “light touch” nature of the treatment (EA, Section 2.3.2).

Table 4 - 3. Effects of Alternatives on hydrologic functioning condition. (in the transient snow zone only).

HUC 6 Subwatershed	Alternative 1 (No Action – baseline)		Alternative 2		Alternative 3	
	Acres in properly functioning condition *	Percent of all TSZ acres	Acres in properly functioning condition **	Percent of all TSZ acres	Acres in properly functioning condition **	Percent of all TSZ acres
Gold Mountain/Panther (6607 acres in the TSZ)	5104	77	4995	76	5077	76

* - same as above table

** - same as above table

It is unlikely that baseflow in small, headwater streams (1st, 2nd and 3rd order) that are adjacent to most harvest units would increase immediately following harvest because fully vegetated riparian reserves (one site potential tree height in width) would probably utilize any groundwater that was excess to needs of residual vegetation in a recently harvested and site- prepped harvest unit immediately upslope. Flow in small streams adjacent to harvest units could actually decrease somewhat for several years as rapidly growing conifers, hardwoods and shrubs reoccupy the harvested site. Potential for changes in baseflow in small perennial streams would be greatest next to RH units and less where there has been commercial thin. Unit 27-6 (2 acres, Group Selection) is the only unit adjacent to a fish-bearing stream.

It is unlikely that any logging-related activity other than harvest itself (i.e. log yarding and hauling, temporary road construction or road renovation, construction, decommissioning, gating,

site preparation) would have any measurable effect on peak or base flows because either there is no inherent mechanism to cause a change or using effective PDFs would prevent these activities from affecting peak flows.

Alternative 3

Effects would be the same as in Alternative 2 except that the potential for harvest to increase peak flows in small streams in the Gold Mountain Creek HUC 7 and Panther Creek HUC 7 (both intensively harvested on private lands in the recent past) would be somewhat less because at least 60% canopy closure (rather than 40%) would be retained in commercial thin harvest units located in the transient snow zone.

4.9.2 Soils

Activities proposed under this alternative would cause soil displacement, compaction and loss of productivity on acres of ground that are associated with landings, cable yarding, tractor logging and construction of temporary roads. However, implementing Best Management Practices (BMPs) in Appendix D of the RMP should prevent unacceptable degradation of the soil resource (RMP EIS Volume 1 page 4-12). Any increase in soil compaction as a result of tractor yarding would be negligible and of insufficient magnitude to increase overland flow because subsoiling skid roads (PDF Section 2.2.3) would substantially restore soil infiltration capacity during storm events.

Cable harvesting of RH units would result in slight compaction on about 6% of each harvest unit and on 3% of each CT unit. About 12% of the ground in tractor logging units (using designated skid roads) would experience moderate compaction; however, compaction would be alleviated by about 80% by subsoiling. As mentioned in the PDFs, helicopter landings would be subsoiled and planted after harvest.

Sub-soiling roads (decommissioning), tractor skid trails and helicopter landings would increase potential for soil movement but it would not contribute to stream sedimentation because areas to be subsoiled 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. There would be minimal loss of soil productivity following subsoiling since nutrients would still be available for reestablishment and growth of vegetation. Subsoiling temporary roads and helicopter landings would help restore the natural hydrologic regime by increasing moisture infiltration rate during storm events and it would result in a net gain in production potential of the sites.

Pile and burn or broadcast burning would reduce the amount of organic litter but not destroy the organic (decomposed and usually wet at the time of the burn) horizon when burn guidelines are implemented as planned (PDFs, section 2.2.8). Therefore site productivity should be maintained in the long term.

Bare soil exposed from prescribed burning would not exceed guidelines in the Monitoring Handbook. While broadcast burning is proposed to be done under cool, moist conditions, there is a possibility that the fire could be more intense than desired. If so, there would be a short-term loss of soil productivity. Prescribed burning would improve planting access. The potential for adversely affecting slope stability, soil compaction and soil productivity does not appreciably differ among Alternatives. Possible adverse effects of the Action Alternatives on these factors have been adequately mitigated through application of Standards and Guidelines, and through implementation of appropriate PDFs and BMPs.

4.9.3 Summary of Watershed and Soils Effects

In summary, there would be a slightly higher potential for timber harvest to increase peak flows in some small, non fish-bearing streams in Alternative 2 than in Alternative 3 because only 40% forest canopy would be retained during commercial thinning in the transient snow zone, rather than 60% in Alternative 3. Any increases in peak flow in either Action Alternative, would be within the range of natural variation. The magnitude of short term adverse effects and long term benefits of road renovation on water quality would be the same in both Action Alternatives. Additionally, no factor in the Matrix of Pathway Indicators (NMFS 1996) for aquatic habitat would be degraded in the short or long term in the Walker/ Gold Mountain /Panther HUC 6 watershed (Appendix A).

4.9.4 Cumulative Effects

The following BLM timber sales and management activities have been completed or are planned for in the West Fork Cow Creek watershed:

Golden Panther Timber Sale
Key Elk Timber Sale
Bear Pen Timber Sale
Mr. Wilson Timber Sale

Rip and barricade Panther Creek roads #31-9-11.3 and 31-9-11.2	1994
Rock Panther Creek roads #31-9-15 and #31-9-27	1995
Rock the Wallace Creek road #31-9-33.2	1995
Repair slide on road # 31-9-35	1995
Repair Lower Walker Creek road	1997
Renovate and waterdip Bear Creek road	1997
Replace East Fork Elk Valley Creek culvert #1 (fish passage)	1997
Replace West Fork Elk Valley Creek culvert (fish passage)	1998
Repair Middle Walker Creek road (slide and prism failure)	2000
Replace East Fork Elk Valley Creek culvert #2 (fish passage)	2001
Walker Prairie Road culvert replacement	2003
Panther Creek Road stabilization (trench drain, rocking, buttressing)	2003

Cumulative effects of the Action Alternatives would be minimal and undetectable at the HUC 5 watershed scale because proposed harvest acreage is small compared to the HUC 5 watershed area and because appropriate BMPs (USDI 1995) and PDFs would be used to minimize effects to the environment..

Closing several miles of road to vehicle use by installing gates would reduce harassment of elk and potential for road damage during critical winter months. However, total road density would not change. Although compaction in the Planning Area would be reduced by subsoiling and planting selected skid trails, the level of activity would be insufficient to measurably improve current conditions at the fifth-field watershed scale (West Fork Cow Creek).

Reciprocal road use agreements between BLM and commercial forest landowners often limit options for BLM to decommission roads that are not needed to manage BLM lands. It would take the concerted effort of all landowners reducing impacts of roads and tractor logging under their jurisdiction to measurably reduce stream sedimentation, road density and compaction across the fifth-field watershed.

Logging-related activities continue at a rapid rate on private lands within this HUC 5 watershed. Much of the logging is done with crawler 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 (NFP). It is expected that logging activities, the primary activity throughout the watershed, on private lands would continue to degrade quality of streambed substrate, increase water temperature and remove sources of large down wood, especially in small streams. 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.

4.9.5 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. 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 4 - 4. Estimated miles of Essential Fish Habitat (Magnuson-Stevens Act) within the Willy Slide Timber Sale Planning Area.

Stream Name	Miles of EFH for coho salmon*	Miles of EFH for chinook salmon
West Fork Cow Creek	6.6	0
Gold Mountain Creek	1.5	0
Panther Creek	1.2	0
Walker Creek	1.1	0
Wallace Creek	0.3	0

* Not known to utilize habitat within the HUC 6, although it is accessible.

Activities associated with the Willy Slide timber sale would have no adverse effect on EFH for coho and chinook salmon because of the reasons already discussed in the Effects section for Watersheds. Effects on EFH would be minimized or prevented by incorporating PDFs in accordance with the Northwest Forest Plan and the Medford District RMP Record of Decision.

4.10 Visual Resources

Action Alternatives (Alts 2, 3)

Direct Effects:

Proposed harvest methods on all units located in the Willy Slide TS are acceptable and coincide with the objectives of VRM Class IV as stated in the Medford District RMP. Increased transparency of the forested lands would occur as would a decrease in the existing vertical line of the landscape. A decrease in density and dark green colors would also occur.

The temporary road construction under Alternative 2 located in Units 33-1, 33-2, 23-4, 15-2, 27-3, could dominate the view of the casual observer traveling in that area on forest roads on a short term basis. However these roads would be returned to there natural condition after harvested, and related treatments are completed, therefore no long term visual affects are anticipated.

Cumulative Effects:

All proposed harvest actions related to the Willy Slide Project would have a slight to moderate increased visual impact to persons traveling on the mountain roads that exist throughout the Willy Slide Project Planning Area. Existing and future private land clear-cutting would continue to have a substantial visual impact on the characteristic landscape in this area through a continued decrease forest density.

4.11 Recreation**Action Alternatives (Alts 2 & 3)****Direct Effects:**

Elk habitat enhancement would support the recreational use of the area. Other proposed Planning Area actions would have little to no direct effect on the dispersed recreational use of the area other than scenic quality which is addressed in the Visual Quality section of this EA. Some short term increased truck traffic would occur which may effect visitors to the Planning Area during the harvest phase of the proposal.

Cumulative effects:

Little or no cumulative effects would occur to the dispersed recreation environment of the Willy Slide Planning Area due to this proposal.

Chapter 5 – List of Preparers

5.0 Agencies and Persons Consulted

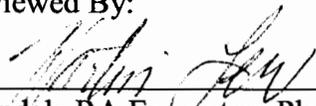
A legal advertisement will be placed in local newspapers to announce to the public that the Glendale Resource Area is requesting public comments on the proposed management action. The EA will also be available for review at the BLM Medford District Office, the Medford District's web site (www.or.blm.gov/Medford/planning) or by request. In addition, notification of this proposal will be sent to the Oregon Dept. of Forestry, county commissioners for the affected county, several environmental groups, representatives of the timber industry, and the interested public to request their comments. These announcements would be made following completion of this environmental assessment and before a decision is made.

A 30 day comment period will begin after public notification in the local newspapers. Comments, including names and street addresses of respondents, will be available for public review. Individual respondents may request confidentiality. If you wish to withhold your name or street address from public review or from disclosure under the Freedom of Information Act, you must state this prominently at the beginning of your written comment. Such requests will be honored to the extent allowed by law. All submissions from organizations or businesses, and from individuals identifying themselves as representatives or officials of organizations or businesses, will be made available for public inspection on their entirety.

5.1 List of Interdisciplinary Preparers

<u>Name</u>	<u>Title</u>	<u>Responsibility</u>
Bob Bessey	Fisheries, Riparian, ACS	Fisheries Biologist
Dustin Wharton	Roads	Engineer
Sarah Bickford	Forester	Timber, logging systems
Terri Brown	Fuels, Fire	Fuels Specialist
Marlin Pose	Wildlife	Wildlife Biologist
Doug Stewart	Forester	Silviculture
Rachel Showalter	Botany	Botanist
Martin Lew	NEPA writer/editor	NEPA Planner

Reviewed By:



Glendale RA Ecosystem Planner
Reviewed for format and adequacy



Date

Joan Resnick
Acting Field Manager, Glendale Resource Area
Medford District, BLM

Date

Acronyms and Glossary

Abbreviations:

ACS	Aquatic Conservation Strategy
BLM	Bureau of Land Management
BMP(s)	Best Management practices
CT	Commercial Thinning
DBH	Diameter at breast height
EA	Environmental Assessment
ESA	Endangered Species Act
GFMA	General Forest Management Area
GIS	Geographic Information System
IDT	Interdisciplinary planning team
NEPA	National Environmental Policy Act
NFP	Northwest Forest Plan
NHPA	National Historic Preservation Act
ODFW	Oregon Department of Fish and Wildlife
OR	Overstory Removal
Special Status	Sensitive, Assessment, Tracking
S&M	Survey and Manage
USDI	United States Department of Interior
USF&WS	United States Fish and Wildlife Service
WFCC	West Fork Cow Creek

Affected Environment. The natural, physical, and human-related environment that is sensitive to changes due to proposed actions.

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

Alternative. One of several policies, plans or projects proposed for decision-making.

Anadromous Fish. Fish that are born and reared in freshwater, move to the ocean to grow and mature, and return to freshwater to reproduce. Salmon and steelhead are examples.

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)).

Broadcast Burning. Allowing a prescribed fire to burn over a designated area within well defined boundaries for reduction of fuel hazards or as a silvicultural treatment, or both.

Candidate Species. Those plants and animals included in Federal Register “Notice of Review” that are being considered by the U.S. Fish and Wildlife Service for listing as threatened or endangered.

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 16 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.

Connectivity. A measure of the extent to which conditions between late-successional/old-growth forest areas provide habitat for breeding, feeding, dispersal, and movement of late-successional/old-growth-associated wildlife and fish species.

Core Area. That area of habitat essential in the breeding, nesting and rearing of young, up to the point of dispersal of the young.

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.

Critical Habitat. Under the Endangered Species Act, (1) the specific areas within the geographic area occupied by a federally listed species on which are found physical and biological features essential to the conservation of the species, and that might require special management considerations or protection; and (2) specific areas outside the geographic area occupied by a listed species when it is determined that such areas are essential for the conservation of the species.

Cultural Resources. The physical remains of human activity (artifacts, ruins, burial mounds, petroglyphs, etc.) that have 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.

Ecosystem. The complete biological and abiotic system formed by the interaction of a group of organisms and their environment.

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.

Emissions. Substances discharged into the air, such as from tractors and trucks..

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.

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.

General Forest Management Area (GFMA). Forest land managed on a regeneration harvest cycle of 70-110 years. A biological legacy of six to eight green trees per acre would be retained to assure forest health. Commercial thinning would be applied where practicable and where research indicates there would be gains in timber production.

Habitat Fragmentation. The breaking up of habitat into discrete islands through modification or conversion of habitat by management activities.

Handpile burning. Prescribed fire used to remove man-made or natural collections of concentrated woody debris. Generally the fire is hotter than in broadcast burning or underburning.

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

Hydrologic. Pertains to the quantity, quality and timing of water yield from forested lands.

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.

Issue. A point, matter, or question of public discussion or interest, to be addressed or resolved through the planning process.

Land Use Allocation. Allocations of a land area which defines allowable uses/activities, restricted uses/activities, and prohibited uses/activities. Each allocation is associated with a specific management objective.

Landscape. A heterogeneous land area with interacting ecosystems that are repeated in similar form throughout.

Management Prescription. A set of land and resource management policies that, as expressed through Standards and Guidelines, creates a Desired Future Condition over time.

Matrix Lands. Federal lands outside of reserves and special management areas that will be available for timber harvest at varying levels.

Mature Stand. A mappable stand of trees for which the annual net rate of growth has peaked. Stands are generally greater than 80-100 years old and less than 180-200 years old. Stand age, diameter of dominant trees, and stand structure at maturity vary by forest cover types and local site conditions. Mature stands generally contain trees within a small average diameter, less age class variation, and less structural complexity than old-growth stands of the same forest type. Mature stages of some forest types are suitable habitat for spotted owls. However, mature forest are not always spotted owl habitat, and spotted owl habitat is not always mature forest.

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.

Monitoring. The process of collecting information to evaluate if objectives and anticipated or assumed results of a management plan are being realized or if implementation is proceeding as planned.

Multi-aged Stand. A forest stand which has more than one distinct age class arising from specific disturbance and regeneration events at various times. These stands normally will have multi-layered structure.

Multi-layered Canopy. Forest stands with two or more distinct tree layers in the canopy; also called multi-layered stands.

National Ambient Air Quality Standards (NAAQS). Standards designed to protect public health and welfare, allowing an adequate margin of safety. For particulate matter less than ten microns in size (PM10), 50 micrograms per cubic meter annual average and 150 micrograms per cubic meter, 24-hour average; not to be exceeded more than once per year.

National Environmental Policy Act of 1969. 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.

National Environmental Policy Act (NEPA) Process. An interdisciplinary process, which concentrates decision making around issues, concerns, alternatives, and the effects of alternatives on the environment.

Natural Regeneration. Renewal of a tree crop by natural means using natural seed fall and/or tree regeneration existing before stand harvest.

No-Action Alternative. The No-Action alternative is required by regulations implementing the National Environmental Policy Act (NEPA) (40 CFR 1502.14). The No-Action alternative provides a baseline for estimating the effects of other alternatives. When a proposed activity is being evaluated, the No-Action alternative discusses conditions under which current management direction would continue unchanged.

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

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

Old-growth. A forest stand usually at least 180-220 years old with moderately high canopy closure; a multi-layered, multi-species canopy dominated by large overstory trees; high incidence of large trees, some with broken tops and other indications of old and decaying wood (decadence); numerous large snags; and heavy accumulations of wood, including large logs on the ground (coarse woody debris).

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

Overstory Removal. The final stage of cutting where the remaining overstory trees are removed to allow the understory to grow. Overstory removal is generally accomplished three to five years after reforestation and when adequate stocking has been achieved.

Peak Flow. The highest amount of stream or river flow occurring in a year or from a single storm event.

Perennial Streams. Streams that flow continuously throughout the year.

Planning Area. For the purposes of this EA, it is the area to be analyzed for potential forest management activities that implement the Medford Resource Management Plan. Geographic features, such as watershed boundaries, are generally used. BLM planning decisions apply only to BLM-administered lands.

Plant Community. An association of plants of various species found growing together in different areas with similar site characteristics.

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.

Range of Alternatives. A range of alternatives provides a set of different ways for managing public lands, offering many different levels of goods and services. Each alternative is one way of managing the Federal Forest, expressed as management emphasis leading to a unique set of goods and services being available to the public.

Raptors. Predatory birds, such as falcons, hawks, eagles, or owls.

Reforestation. The natural or artificial restocking of a forest area with trees--includes measures to obtain natural regeneration, as well as tree planting and seeding. Reforestation is used to produce timber and other forest products, protect watershed functioning, prevent erosion, and improve other social and economic values of the forest, such as wildlife, recreation, and natural beauty.

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

Regeneration Harvest. A silvicultural system using stand regeneration methods that include modified versions of the seed tree, shelterwood and overstory removal harvest methods. Stands remaining after regeneration harvest will generally resemble reserve seed tree cuts.

Renovation – Roads. Restoration of the road to the original standard by surface grading, spot rocking, reshaping ditch lines, improving and installing additional drainage structures and replacement of deteriorating culverts. Renovation also includes converting road prisms from ditched to out-sloped roadbeds with waterdips, which reduces long-term maintenance costs and properly drains roads during storm events.

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 Areas/Habitats. Areas of land that are directly affected by water, usually having visible vegetation or physical characteristics reflecting the influence of water. Streambanks, lake edges, or marshes are typical riparian areas.

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.

Road Maintenance. The upkeep of the entire road system including surface and shoulders, parking and side areas, structures, and traffic-control devices necessary for its safe and efficient utilization.

Sediment. Any material carried in suspension by water, which would ultimately settle to the bottom. Sediment has two main sources: from the water channel itself and from disturbed upland sites.

Seed Tree. A tree selected as a natural seed source within a shelterwood or seedtree harvest cut. Sometimes, these trees are also reserved for seed collection.

Seedlings and Saplings. Non-commercial-size young trees, generally occurring in plantations.

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.

Soil Productivity. Capacity or suitability of a soil for establishment and growth of a specified crop or plant species, primarily through nutrient availability.

Special Status Species. Includes proposed species, listed species, and candidate species under the ESA; State-listed species; and BLM State Director –designated sensitive species.

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

Structural Diversity. Variety in a forest stand that results from layering or tiering of the canopy and the die-back, death and ultimate decay of trees. In aquatic habitats, the presence of a variety of structural features such as logs and boulders that create a variety of habitat.

Succession. A series of dynamic changes by which one group of organisms succeeds another through stages leading to potential natural community or climax. An example is the development of series of plant communities called seral stages following a major disturbance.

Successional Stage. A stage or recognizable condition of a plant community which occurs during its development from bare ground to some climax plant community.

Surface Erosion. The detachment and transport of soil particles by wind, water, or gravity. Surface erosion can occur as the loss of soil in a uniform layer (sheet erosion), in many rills or dry rattle.

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

Underburning. The use of prescribed fire, most often below an overstory canopy to remove excess forest fuels. Generally conducted in the spring months and a cooler fire than broadcast burning.

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

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

Water Yield. The quantity of water derived from a unit area of watershed forming streamflow.

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.

Wildlife Diversity. The relative abundance of wildlife species, plant species, communities, habitats or habitat features per unit area.

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

References

Atzet, T. and D.L. Wheeler. 1984. Preliminary Plant associations of the Siskiyou mountain province. USDA Forest Service, Siskiyou National Forest, Grants Pass, OR

BLM Manual 6840

Chen, J. 1991. Edge effects: microclimatic pattern and biological responses in old-growth Douglas-fir forests. PhD Thesis, University of Washington.

Davis, S. 1990. The Effectiveness of a Winged Subsoiler in Ameliorating a Compacted Clayey Forest Soil. Western Journal of Applied Forestry Vol. 5, No. 4, October 1990, pp 138-139.

Harr, D.R. 1989. Cumulative effects of timber harvesting on streamflows. Paper presented at the technical session on cumulative effects of forest practices,. Society of American Foresters, 1989 National Convention; Spokane, Washington.

Jones, J.A. 2000 Hydrologic processes and peak discharge response to forest removal, regrowth and roads in 10 small experimental basins, western Cascades, Oregon. Water Resources Research, Vol 36, No. 9, pp2621-2642.

Pullen, R. 1995. Overview of the environment of native inhabitants of southwest Oregon, late prehistoric era. U.S. Department of Agriculture, Forest Service. Grants Pass, OR.

Rodrigues, E. 1998. Edge effects on the regeneration of forest fragments in south Brazil. PhD Thesis, Harvard University.

Thomas, T.L. and J.K. Agee. 1986. Prescribed fire effects on mixed conifer forest structure at Crater Lake, Oregon. Canadian Journal of Forestry Research.

U.S.D.A. Forest Service and U.S.D.I. Bureau of Land Management. 1994. *Final Supplemental Environmental Impact Statement on Managed Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl*. Pacific Northwest Region, Portland, Ore.

U.S.D.A. Forest Service and U.S.D.I. Bureau of Land Management. 1994. *Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl, and Standards and Guidelines for Management of*

Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl. Pacific Northwest Region, Portland, Ore.

U.S.D.I. Bureau of Land Management. 1995. *Record of Decision and Resource Management Plan, Medford District.* Medford, Ore.

U.S.D.I. Bureau of Land Management. 1999. Grave Creek Watershed Analysis. Unpublished report. Glendale Resource Area, Medford BLM, Medford, Ore

U.S.D.I. Bureau of Land Management. 1997. *West Fork Cow Creek Ecosystem Analysis.* Unpublished report. Glendale Resource Area, Medford BLM, Medford, Ore. 98 pp. + maps.

USDA/USDI. 2003. RogueRiver/South Coast Biological Assessment. FY04-08 Grants Pass and Medford, OR.

USDA/USDI. 2004. Final Supplemental Environmental Impact Statement to remove or modify the survey and manage mitigation measures standards and guidelines. Portland, OR. Volume 1, 332pp.

USDI. 2004. Endangered and threatened wildlife and plants; 12-month finding for a petition to list the West Coast Distinct Population Segment of the Fisher (*Martes pennanti*); proposed rule. Federal Register 69 (68). 24pp.

White, D. Guidelines for Snag and Down Wood Prescriptions in Southwestern Oregon. U.S. Forest Service

Zielinski, William J.; Kucera, T.E. 1995. American Marten, Fisher, Lynx, and Wolverine: Survey Methods for Their Detection. Albany, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station; Gen. Tech. Rep. PSW-GTR-157: 163p.

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

Project Name: Willy Slide Timber Sale **6th Field HUC or Project Scale:** Gold Mountain/ Panther Creek **Date:** Preparer(s): Bob Bessey (Fish)
Loren Wittenberg (Hydrology/ Soils)

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

		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				X		
	Physical Barriers	WA				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			WA;PJ		X		
		Width/Depth Ratio	ODFW				X	
Chan. Cond. & Dyna.	Streambank Condition	ODFW				X		
	Floodplain Connectivity	WA;PJ				X		
		Peak/Base Flows		WA;PJ			X	
Flow/Hydro	Drainage Network Increase			WA		X		
		Road Density and Location	WA;PJ (location)		WA (density)		X	
Wshed Condition	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.

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 judgement

WA: West Fork Cow Creek Watershed Analysis

EA: Willy Slide Timber Sale EA # OR118-04-_____. The Aquatic Conservation Strategy

Consistency Analysis is considered a supplement to the EA

AM: Aquatic macroinvertebrate survey and report.

Appendix B. Aquatic Conservation Strategy Consistency Analysis for the Willy Slide Project.

The Northwest Forest Plan's Aquatic Conservation Strategy objectives apply only at 5th field watershed and larger scales (USDI, USBLM, 2004). The following analysis briefly describes aspects of the timber sale that are related to each of the ACS objectives and concludes whether the scope and duration of the proposed action is sufficient to preclude or achieve each objective at the 5th field watershed scale. ACS Objectives apply only to federal lands.

Forty seven (47) percent of the acreage within the project area and 52% of the West Fork Cow Creek fifth field watershed is under BLM and USFS management where land use practices must incorporate appropriate Best Management Practices (USDI 1995) and Standard and Guidelines (USDA and USDI 1994).

Land use practices on private lands, which are regulated by the State of Oregon, are far less restrictive than on public lands.

Refer to Table 2-5 and 2-6 in the EA for a summary of harvest treatment acres, yarding methods, site prep and road management and to the remainder of the EA for environmental baseline and effects of the proposed action.

A. Relationship between the Proposed Action and Individual ACS Objectives

1. Maintain and restore the distribution, diversity and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations, and communities are uniquely adapted.

The objective focuses on watershed and landscape scale features. These features include networks of late-successional refugia and riparian corridors that connect the terrestrial and aquatic ecosystems. A high percentage of late-successional upland and riparian forest have been impacted and fragmented by management activities. Late seral forest on public land covers only about 55 % of the West Fork Cow Creek watershed. Distance between the remaining late seral forest has increased over the years making it less effective for wildlife use. Approximately 50% of riparian corridors on federally managed lands are in late successional condition; the percentage is probably much lower on private land.

Timber harvest affects the distribution, diversity and complexity of important landscape features. Low gradient streams, ponds, wetland terraces and wet meadows, key components of aquatic ecosystems, have been adversely affected through past timber harvest in this watershed.

Relatively isolated older stands, old partial cuts and young stands in need of thinning comprise most potential harvest units in the Willy Slide timber sale proposal. Harvest in units with late successional habitat (e.g. 17-1) would be designed to benefit elk and minimize the size of openings. Harvest in older forest stands would be consistent with the RMP ROD for Medford (p.48, UDSDI 1995) by maintaining a minimum level of 25-30% late successional habitat in each of the five connectivity blocks (none in the Gold Mountain/Panther HUC 6) and at least 15% of all acres in the West Fork Cow Creek watershed in late successional condition (currently at about 55%).

Timber harvest would not retard natural succession of riparian vegetation toward late seral condition because harvest is not planned in Riparian Reserves. Log hauling on existing roads is the only activity that is planned in Riparian Reserves. No roads would be built parallel to and adjacent to streams under the proposed action.

Conclusion: Retaining riparian reserves, as called for in the Medford District ROD, would contribute toward restoring the diversity and complexity of riparian habitat at the fifth field watershed scale.

2. Maintain and restore spatial and temporal connectivity within and between watersheds. Lateral, longitudinal and drainage network connections include floodplains, wetlands, upslope areas, headwater tributaries, and intact refugia. These network connections must provide chemically and physically unobstructed routes to areas critical for fulfilling life history requirements of aquatic and riparian-dependent species.

Riparian Reserves within the West Fork Cow Creek watershed have been negatively impacted by land management practices, such as road building, timber harvest and stream cleanout. Only 50% of Riparian Reserve acreage is in late successional condition; the percentage for riparian habitat on private land is considerably less. Roads in Riparian Reserves have degraded and fragmented wildlife habitat. Travel corridors for wildlife have also been blocked or restricted in upland habitat. High water temperatures in mainstem West Fork Cow Creek have influenced habitat connectivity in summer months. Although there are no subwatersheds within the West Fork Cow Creek HUC 5 that have not been degraded by human activity, Bobby Creek (HUC 7), which is not in the project area, is the least disturbed by human activity and is the best example of a refugium for aquatic species in this watershed.

The proposed action avoids impacting unstable ground where floodplains, wetlands, upslope areas, headwater tributaries are known to be vulnerable to timber harvest. Retaining Riparian Reserves will in the long term allow this habitat type on public land to recover from past human and natural disturbances and to improve their value as connectivity corridors. It is expected that although riparian habitat connectivity will improve over time on BLM land by retaining riparian reserves, it will remain highly fragmented across the watershed due to practices on interspersed private lands.

Conclusion: Retaining riparian reserves, as called for in the Medford District ROD, would help improve riparian connectivity in this fifth field watershed.

3. Maintain and restore the physical integrity of the aquatic system, including shorelines, banks and bottom configurations.

Riparian timber harvest, stream cleanout and road building led to an overall decrease in the diversity, complexity and integrity of riparian and instream habitat within the West Fork Cow Creek watershed. Some roads have been constructed immediately adjacent to and parallel to streams, decreasing streambank stability and meander and removing future sources of large down wood; timber harvest has had the same effects. Some streambanks on BLM and private lands are unstable because of historic tractor logging and placer mining.

Rocking roads and restoring proper drainage by selective blading, replacing aging culverts and installing additional structures would help reduce the amount of fine sediment in channel substrate. The short term increases of fine sediment during road renovation, decommissioning and new construction are not expected to substantially alter channel substrate because appropriate PDFs would be used to minimize impacts.

Conclusion: The physical integrity of streambanks and streambeds would be maintained at the fifth field watershed scale because effects of road renovation (sediment) and timber harvest (streamflow) at the project scale would be immeasurable.

4. Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems. Water quality must remain within the range that maintains the biological, physical, and chemical integrity of the system and benefits survival, growth, reproduction, and migration of individuals composing aquatic and riparian communities.

Water temperature and turbidity (suspended sediment) have been impacted by forest management activities and occasionally by placer mining. The State of Oregon has identified West Fork Cow Creek and two of its tributaries (Elk Valley Creek and Slide Creek, neither of which is in the project area) as water quality limited for temperature. However, some of the problem may be the result of natural conditions (refer to the WA). Roads are important contributors of sediment to streams throughout the watershed.

Retaining Riparian Reserves at least one site potential tree height wide would help maintain and improve water temperature over the longterm and to filter sediment from overland flow that may be mobilized in harvest units and from roads.

Log landings would be located and designed to limit the potential for oil, fuel or other contaminants to reach streams.

Road renovation would result in localized stream turbidity during the first major rainstorm of the wet season. However, it would be a negligible, short-term effect and would not impede recovery of the streams' historic sediment regimes because appropriate PDFs would be used to minimize impacts. Renovation would reduce potential for failure of the road prism and the amount of sediment that would degrade aquatic habitat. Closing roads using gates or barricades would eliminate vehicle use and erosion of unsurfaced roads during winter.

Restricting log hauling and road renovation, maintenance and decommissioning to the dry season would minimize the amount of sediment that could reach streams. Any sediment that is generated from these activities would be local and transitory, dispersing during the first several months of the wet season.

Conclusion: PDFs that are used at the project scale to restore water quality would also help to maintain water quality at the fifth field watershed scale.

5. Maintain and restore the sediment regime under which aquatic ecosystems evolved. Elements of the sediment regime include the timing, volume, rate and character of sediment input, storage and transport.

Increased sediment in streambed substrate adversely affects many aquatic species, from aquatic insects to amphibians, salmon and steelhead trout. The 400 miles of road in this 111,686 acre watershed (about 5 miles per square mile) are an important source of sediment in streams.

All potential harvest units were inspected for indications of current and potential slope instability; problem areas were deleted from further consideration or buffered where appropriate to help ensure that harvest would not retard attainment of this objective.

Retaining Riparian Reserves that have adequate ground cover (including duff, litter and shrubs) would help ensure that any sediment that is mobilized in harvest units from roads or in prescribed burn areas would be prevented from reaching streams and thus not exacerbate existing sediment conditions.

Prescribed burning for fuels reduction in harvest units would reduce potential for stand replacement fires that can contribute large quantities of sediment to streams and help to restore

the natural sediment regime. Guidelines for prescribed burning would help minimize the potential for sediment to enter streams. Conversely, large stand replacement fires followed by high intensity storms, landslides and debris flows have historically been important for maintaining aquatic habitat diversity and fish production by delivering large quantities of boulders, gravel and large wood to streams.

Conclusion: Use of appropriate PDFs for blocking and renovating roads and for tractor logging would help to restore the natural sediment regime. Any adverse effects would be minimal, short term, localized and undetectable at the 5th field watershed scale.

6. Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, duration, and spatial distribution of peak, high and low flows must be protected.

Management activity can affect streamflow characteristics in forested watersheds through factors such as the type of timber harvest (e.g. regeneration harvest, commercial thinning), method of harvest (tractor, cable, helicopter), area harvested (acres) in individual watersheds, road density (miles per square mile), road design (inslope, outslope), road location (valley bottom, mid-slope, ridgetop), amount of compacted ground (roads, landings), amount of a watershed in transient snow zone, amount of open canopy in transient snow zone, storm duration and intensity, in addition to many other factors.

Refer to the lengthy EA discussion of the proposed action on peak and base flows (Section 4.8).

Conclusion: The proposed action would maintain the timing, magnitude, duration and spatial distribution of peak, high, and low flows at the watershed scale because any effects at the project scale would be immeasurable.

7. Maintain and restore the timing, variability and duration of floodplain inundation and water table elevation in meadows and wetlands.

Background information for Objective #6 also applies to this objective.

There are no meadows or wetlands adjacent to harvest units. Virtually all streams adjacent to harvest units are hillslope or terrace- constrained so their floodplains are generally restricted to within several feet of the stream. The proposed action would not alter streamflow or groundwater movement to any meadow or wetland within the project area on public or private

lands. Seeps and springs would be protected with a 100 foot wide Riparian Reserve. Riparian reserves at least 150 feet wide each side of streams would be adequate to prevent physical disturbance of riparian habitat and to ameliorate any hydrologic changes that may result from timber harvest. Refer to the EA Section 4.8 for a thorough discussion of the effects of the proposed action on streamflow.

Conclusion: The objective would be met at the watershed scale because none of the harvest units are adjacent to meadows or wetlands. Plus, any immeasurable increases in peak flow at the project scale would also be insignificant at the watershed scale.

8. Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion and channel migration and to supply amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability.

This objective focuses on riparian plant communities and the functions that they provide. Plant species composition and structural diversity, including microclimate in riparian areas and wetlands, have been adversely affected throughout the watershed by land management practices such as road building and timber harvest. Only 50% of Riparian Reserve acreage in this 5th field watershed is in late successional condition; the percentage for riparian habitat on private land is considerably less.

Retaining riparian reserves between all harvest units and adjacent streams, seeps and springs will protect existing riparian values and provide for eventual recovery of degraded habitats over time. No commercial timber harvest is planned in riparian reserves.

Conclusion: The objective would be met at the 5th field watershed scale because the species composition and structural diversity of plant communities would be maintained and restored in riparian areas by retaining riparian reserves.

9. Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species.

Much of the discussion in Objective #8 also applies to this objective. Riparian areas provide habitat for breeding, rearing, foraging, dispersal for many species.

Retaining riparian reserves between all harvest units and adjacent streams, seeps and springs will

protect existing values and provide for eventual recovery of degraded habitats over time through natural succession. No commercial timber harvest is planned in riparian reserves.

No roads would be constructed through riparian reserves.

Conclusion: This objective would be met at the fifth field watershed scale of analysis because there is no commercial harvest in any riparian.

B. Analysis of specific Medford District ROD Standards and Guidelines that apply to this project

This project is located on lands classified as Matrix (General Forest Management Area); therefore the S&Gs (USDA and USDI 1994) for this Land Use Allocation would apply. The following S&Gs, which are required by the Medford District ROD (USDA and USDI 1994 and USDI 1995) particularly apply to this action.

1). Riparian Reserves are specified for five categories of streams or waterbodies (USDA and USDI 1994, C-30). Riparian Widths were established based on the height of an average site potential tree.

2). S&G RF-2a through 2g (C-32) recommends specific practices for road construction and maintenance that should be used whenever they are appropriate. All would be applied under the proposed action (EA Section 2.2.2). No landings are proposed in Riparian Reserves.

3) S&G RF-2b (C-32) states that a watershed analysis needs to be completed prior to constructing any new roads in riparian reserves. A watershed analysis for West Fork Cow Creek was completed in 1999.

4) S&G RF-3a (C-32) states that road renovation and reconstruction used be used to correct situations where roads and associated drainage features pose a substantial risk to aquatic and riparian habitats. Approximately 40 miles of renovation are planned (EA, Table 2-6).

5) S&G RF-3c (C-33) states that whenever appropriate (considering short-term and long-term transportation needs), roads should be closed or obliterated and stabilized in order to restore or maintain the natural aquatic sediment. As many as six (6) miles of road would be barricaded or blocked by 1 gate (EA, Table 2-6); (roads # 31-9-23.1, 23.2, 23.3, 23.4, 23.5, 23.6, 23.7 and one road with no number).

6) S&G RF-4 (C-33) states that new and existing stream crossings should be able to

accommodate at least the 100-year flood, including associated bedload and debris. Projects should be prioritized based on potential impact to aquatic and riparian resources. Crossings should be designed and maintained to prevent diversion of streamflow out of the channel and down the road during storm events. This would be implemented during road renovation and improvement activities (EA, Section 2.2.2).

7) S&G RF-5 (C-33) states that roads should be designed and maintained to minimize sediment delivery to streams by whatever site specific techniques may be appropriate. This would be accomplished by using appropriate PDFs (EA, Section 2.2.2) and BMPs (USDI 1995) during road renovation and construction.

8) S&G RF-7 (C-33) states that a Road Management Plan that will meet ACS objectives for the watershed should be developed and implemented. The plan is in progress.

Conclusion: Based on this analysis, the proposed project is consistent with the West Fork Cow Creek analysis recommendations and findings that are related to aquatic and riparian management and applicable Standards and Guidelines of the Medford District Land Management Plan Record of Decision. The project would not hinder or prevent attainment of Aquatic Conservation Strategy objectives at the 5th field watershed scale over the long term.

Literature Cited

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

USDI. 1995. Record Of Decision and Resource Management Plan. US Bureau of Land Management, Medford District, Medford, Oregon. Appendix D. Best Management Practices

USDA and USDI. 2004. Record of Decision. Amending Resource Management Plans for Seven Resource Management Districts and Land Resource Management Plans for Nineteen National Forests Within the Range of the Northern Spotted Owl. Decision to clarify provisions relating to the Aquatic Conservation Strategy.

WILLY SLIDE PROJECT

SILVICULTURAL PRESCRIPTION

I. INTRODUCTION

The Willy Slide timber sale is located in T.31S., R09W., Sections 11,15,17,23,27,33. This sale is in the West Fork Cow Creek Ecosystem Analysis Area, a fifth field watershed as designated in the Medford District RMP, and it encompasses portions of 7 seventh field watersheds. All of the sections in this project area are part of the Matrix land allocation as specified in the Medford District Resource Management Plan (RMP). The project area was chosen to be part of a contract with a qualified consultant to develop a timber sale plan, silvicultural recommendations, and Environmental Assessment for the designated Willy Slide area. The objectives were developed from the Medford RMP and refined for this project area by the contractor consultant team. These objectives and the entire project were reviewed during the developmental steps at intervals throughout the process by a BLM interdisciplinary (ID) team. The sale was then reviewed and amended by a BLM ID team consisting of a wildlife biologist, soil scientist/hydrologist, recreation planner, realty specialist, fire/fuels ecologist, botanist, timber planner, and silvicultural prescription writer.

II. OBJECTIVES

The overall objectives for Matrix land allocation in the Medford RMP include:

- produce sustainable supply of timber and forest commodities,
- produce connectivity between late successional reserves,
- provide for organisms associated with both late-successional and younger forests and their dispersal,
- provide early-successional habitat.

Specific objectives designed through the ID team for this timber sale include:

- Harvest timber economically, while protecting other resources.
- Minimize movement of sediment into streams.
- Minimize adverse impacts on species associated with late-successional habitat.
- Promote growth and release of existing young conifer stands.
- Improve elk forage habitat within the RMP designated Elk Management Area.
- Control the spread of the Port-Orford-cedar root disease (*Phytophthora lateralis*) within the Planning Area.

Desired Future Conditions:

Commercial Thin stands - A vigorous stand of conifers exhibiting good tree growth, 80%+ canopy closure, scattered large “legacy” conifers, and a component of hardwoods, snags, and residual course woody debris (CWD).

Overstory Removal and Regeneration Harvest stands - Scattered overstory of large “legacy” conifers (6 -10TPA) with well-stocked understory of vigorous conifers, and component of hardwoods, snags, and residual course woody debris (CWD).

Group Selection stands – A stand of large conifers with small openings, up to 1 acre in size, having a variety of young conifers and shrubs for elk forage imitating small root rot pockets or windthrow openings in a mature stand with a component of hardwoods, snags, and residual course woody debris (CWD) in the overall stand.

Port –Orford Cedar (POC):

Port-Orford cedar has not been located in any of the harvest units that are remaining in this project. It was located in unit 33-4 but this unit has been dropped from the project. POC has been identified in 2 areas along roads 31-8-31 in T31S-R09W-Sec 12, and one seedling was located along road 31-9-27 in T31S-R09W-Sec. 27. The trees located along road 31-8-31, are within a ½ mile section of the road and are scattered seedlings and saplings less than 6” DBH, in draws and within 50 feet of the road edge. There is no evidence of Port-Orford cedar root disease, *Phytophthora lateralis*, (PL) in any of the units in this project or on the trees located on the roads mentioned previously. This project is not within an uninfested 7th field watershed as defined in attachment 1 of the ROD for the FSEIS for Management of Port-Orford Cedar in Southwest Oregon.

III. STAND DESCRIPTION, ANALYSIS, RECOMMENDED TREATMENT

Units 15-2, 17-1b, 23-4, 27-9, 33-1, 33-2a

Unit	Location / HUC 7	Aspect/ Slope / acres	Elevation/ Ann. Prec.	TPCC/ Soils	Site Index
15-2	31S-09W-15	East 20%-65% 95 ac	2500'-3000' 65"-70"	RMR, RTR. 1510F-Acker-Norling, gravelly clay loam, well- drained, mod. permeability	120- 130

Unit	Location / HUC 7	Aspect/ Slope / acres	Elevation/ Ann. Prec.	TPCC/ Soils	Site Index
17-1b	31S-09W-17 C.	East, SE, NE 20%-50% 9 ac	2300'-2600' 80"-85"	NP, FWR/RMR. 325E-Orford gravelly silt loam, well- drained, mod. slow permeability.	120-130
23-4	31S-09W-23.	South, SE, East 20%-40% 6 ac	2600'-2800' 60"-65"	RTR, RMR 1510F-Acker-Norling, gravelly clay loam, well- drained, mod. permeability. Inclusion of 239G-Atring Vermisa, very gravelly loam.	120-130
27-9	31S-09W-27	East, NE 40%-60% 2 ac	2000'-2200' 65"-70"	RMR, FWR/RTR. 440G-Remote-Digger, very gravelly loam, well- drained, mod. permeability.	120-130
33-1	31S-09W-33	South, SW 20%-60% 42 ac	2000'-2400' 70"-75"	RTR, RMR, FGR/RTR 1510F-Acker-Norling, gravelly clay loam, well- drained, mod. permeability. 239G-Atring Vermisa, very gravelly loam, well- drained. 330F-Orford - McDuff, silty clay loam, well-drained.	120
33-2a	31S-09W-33	Northwest 40%-65% 5ac	1900'-2200' 70"-75"	RMR 1510F-Acker-Norling, gravelly clay loam, well- drained, mod. permeability.	120

Existing Stand

Overstory – Dominated by DF, with minor component of IC, and in units 15-2, 27-9, 17-1b occasional WF. Stand tree size is 10"-24" DBH. range and average 12"-18" DBH, while units 23-4, 17-1b, and 33-2a have a greater number of conifers 16" to 24" DBH. Stands range from 180 to 300 ft² basal area per acre.

Mid-Canopy - Mix of conifers and hardwoods, 6"-10" DBH. DF is the primary conifer, with IC,

WF, WH also present. Madrone is a major hardwood present with chinquapin, tanoak also a component. Unit 33-1 also has canyon live oak present in varying densities in both tree and shrub form.

Understory – Canopy closures are generally greater than 75% so understory densities tend to be low. DF, WF, WH, IC are the primary conifers present. Hardwoods and shrub densities are also variable, with little present where overstory densities are high. Generally these understories are less than 10' in height. Rhododendron, salal, Oregon grape, madrone, tanoak, and hazel are present in these units at low levels for the majority of the areas, except in concentrations in the canopy openings. Canyon live oak is present in dense patches in unit 33-1.

Stand History

Most of these stands are the result of disturbance within the last 100 years. It appears that wildfire was the primary disturbance event in these stands. There are scattered snags and residual large old conifers in these stands, sometimes present in small patches up to an acre in size. There is evidence of some past salvage activity, however in unit 27-2 the trees that were felled decades ago are still laying where they were felled. Unit 15-2 received a commercial thin in 1994, however harvest was light in most of the area with basal areas presently at 160 to 260 ft² per acre.

Recommended Treatment

Commercial Thin - Units **17-1b, 23-4, 27-9, 33-1, 33-2a**. Thin these stands leaving a residual conifer basal area of approximately 100-120 ft² per acre. Species retention should represent the existing mix of species present in the units. Thin from below removing the smaller less vigorous conifers. Leave trees should be the dominant and co-dominant trees with vigorous crowns, generally 30% or greater crown ratios. Retain a minimum of 40% canopy closure. Retain up to 5 tree form hardwoods per acre, if present. In unit 33-1, concentrations of tree-form hardwoods exist. These should be thinned along with conifers to constitute no more than 25% of the stand basal area.

Commercial Thin / Group Selection – Unit **15-2**. This unit has variable basal area retention from previous thinning and variability of tree sizes that were retained. Thin this unit to open up the conifer crowns for increased growth on residual trees. Remove trees that have crowns touching on 3 of 4 sides (75%) of the reserve tree crowns. The intent is to open up the stand to allow space for crowns of reserved trees to grow without competition from neighboring trees, while retaining cover for elk. Retain minimum of 100 ft² per acre conifer basal area and 40% canopy closure. Retain up to 5 tree-form hardwoods per acre, if present.

Select 10 areas, 1 acre or less in size, scattered throughout the unit, and remove the overstory. Expand existing openings in the canopy to create the 10 areas, however they should be scattered over the unit, not in a concentrated area. These openings are to be created to increase forage for elk in this watershed, while retaining cover in the overall forest area.

Existing snags and coarse woody material should be retained on site. Future recruitment of snags and coarse woody material would come from residual trees in the stand after thinning. Unit 15-2 meets or exceeds the mean length of coarse woody material for all decay classes of the PIEC guidelines (Diane White report).

Fuels Treatment / Site Prep

Units 11-1, 17-1a, 27-6

	Unit 11-1	Unit 17-1a	Unit 27-6
Location	31S-09W-11	31S-09W-17	31S-09W-27
HUC 7			
Acres	19ac (4; 1ac openings)	25ac (5; 1 ac openings)	10 ac (2; 1 ac openings)
Aspect	West-SW	East, SE, NE	East-NE
Slope	50%-60%	20%-45%	20%-40%
Elevation	2500'-2700'	2300'-2600'	1600'-2000'
Ann. Precip.	60"-65"	80"-85"	65"-70"
TPCC	RTR	NP, FWR/RMR	RMR, FWR/RMR
Site Index	110-120	120-130	120-130
Soils	1510F-Acker-Norling, gravelly clay loam, well-drained, mod. permeability. 311E-Preacher-Bohannon loam, well-drained.	325E-Orford gravelly silt loam, well- drained, mod. slow permeability.	58E-Gustin-Orford, clay loam, somewhat poorly drained, slow permeability.

Existing Stand

Overstory – Stands are dominated by DF with occasional WF, IC, WH; 24”-50” DBH with overstory densities ranging from 160 ft² per acre to over 300 ft²per acre. Canopy closures of overstory range from 50% up to 90%. Units 17-1a and 27-6 have the more dense canopies

generally above 70%, with some areas more open. Unit 11-1 is a drier site with canopy closures ranging from 50% to 80%.

Mid-canopy - Primarily DF with WF, WH, madrone, tanoak and CLO. Generally comprises only a small portion of overall stand, usually less than 20%, 6"-12" DBH, much of it suppressed by overstory.

Understory - Mix of DF, WF, WH, madrone, CLO, tanoak, salal, and rhododendron, patchy in distribution, primarily in openings in overstory, 2'-10' in height. Some WRC is also present in unit 27-6. Unit 11-1 has greatest number of patches of understory vegetation, mostly DF and CLO, with occasional DF up to 30" in height.

Stand History

Unit 11-1 is surrounded by past harvest units of varying age. The unit has rocky soils and is a moderately droughty site with CLO as the primary shrub component. Units 17-1a and 27-6 have more dense overstories with less droughty soils, generally good sites. Past harvest in all units has been light, with evidence of very light salvage or single tree selection that appear decades old.

Recommended Treatment

Group Selection – Unit 11-1, select 4, 1 acre areas within the unit spaced throughout the unit.

Layout of the openings could be in a line to facilitate a harvest system

Unit 17-1a, select 5, 1 acre areas within the unit spaced throughout the unit.

Unit 27-6, select 2, 1 acre areas within the unit spaced apart.

Remove commercial timber within these openings. Areas within the units, outside of these openings, account for the residual legacy trees in these stands. The objective is to create vertical structure and increase elk forage in dense stands, imitating small openings often created in unentered mature stands when small root rot pockets occur or windthrow creates small openings. Snags and tree form hardwoods should be retained in openings as long as they don't constitute a safety hazard.

Existing snags and coarse woody material should be retained on site. Future recruitment of snags and coarse woody material would come from residual trees in the stand surrounding the harvested openings.

Fuels Treatment / Site Prep

Units 23-1, 27-4, 27-3 b,c

	Unit 23-1	Unit 27-4	Unit 27-3 b,c
Location	31S-9W-23	31S-09W-27	31S-09W-27
HUC 7	CW0442, Cow ck below Jacob	CW0430, W fk Cow below Goat Trail ck.	CW0433, Bear ck.
Acres	20ac	3ac	b-3ac, c-1ac
Aspect	East, SE-SW	East-NE	East-NE
Slope	30% 50%	20%-40%	30%-65%
Elevation	2600'-2900'	1700'-2000'	1700'-2100'
Ann. Precip.	60"-65"	65"-70"	65"-70"
TPCC	RTR, RMR	RMR	FWR-RMR, RMR
Site Index	120	120-130	120-130
Soils	1510F-Acker-Norling, gravelly clay loam, well-drained, moderate permeability.	58E-Gustin-Orford, clay loam, somewhat poorly drained, slow permeability.	440G-Remote-Digger, very gravelly loam, well-drained, moderate permeability.

Existing Stand

Overstory – Primarily DF with IC & WF present, and scattered WH in units 27-3 and 27-4. Ponderosa and sugar pine replace WF and WH and are present as a minor component in unit 23-1. DBH range is 24"-50", and canopy closures range from 40% to 70% with portions of unit 23-1 having the most open overstory.

Mid-Canopy – Mix of DF, WF, and WH in units 27-3 and 27-4. Unit 23-1 has primarily DF, IC, madrone. DBH range is 8"-18" with canopy closures of the mid-canopy from 20%-70%.

Understory – Units 27-4, 27-3a,b,c. have a mix of DF, WF, WH, WRC, madrone, tanoak, rhododendron, salal, chinquapin, and huckleberry, 4'-30' in height. Unit 27-3a has light densities of conifers, with dense areas of shrubs; salal, rhododendron. The understories

of units 27-4 and 27-3a,b are intermixed with mid-canopies and in the openings in the overstory. Unit 23-1 has primarily DF, WF CLO, madrone, and chinquapin, 4'-30' in height with patchy distribution of the conifers.

Stand History

Unit 27-4 has evidence of past harvest with the growth release of some co-dominant conifers about 45 years ago, likely some salvage or selection harvest. All of these units received a selection harvest in 1976, which was generally quite light, but variable in its distribution within the units leaving different densities of overstory.

Recommended Treatment

Overstory Removal / Commercial Thin – Units 23-1, 27-4, 27-3b,c

Harvest the merchantable conifers, over 20" DBH, leaving 8 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 with a minimum of 1/3 of the leave trees without obvious defect (conk, insects, etc.).

Portions of the stands in these units that have concentrations of younger vigorous co-dominant and mid-canopy conifers, 10"-18" DBH, which are generally under 100 years old, should be thinned to allow growth on the residual trees. Remove the trees that are touching the crowns of the selected leave trees allowing space for residual crowns to expand. Thin from below removing the smaller less vigorous conifers. Leave trees should be the dominant, fast-growing conifers with healthy crowns, generally 30% or greater crown ratios. Retain a minimum of 100 ft² of residual conifer basal area per acre. Retain up to 5 tree form hardwoods per acre, if present.

Existing snags and coarse woody material should be retained on site. Future recruitment of snags and coarse woody material would come from residual trees in the stand after harvest. Unit 27-4 meets or exceeds the mean length of coarse woody material for all decay classes of the PIEC guidelines (Diane White report).

Units 27-2a, 27-2b

	Unit 27-2a	Unit 27-2b
Location	31S-9W-27	31S-9W-27
HUC 7		
Acres	1ac	8ac
Aspect	West	West

	Unit 27-2a	Unit 27-2b
Slope	50%-65%	40%-65%
Elevation	2000'-2200'	1900'-2200'
Ann. Precip.	65"- 70"	65"-70"
TPCC	RTR, FMR/RTR	RTR, FMR/RTR
Site Index	120	120
Soils	1510F-Acker-Norling, gravelly clay loam, well-drained, moderate permeability.	1510F-Acker-Norling, gravelly clay loam, well-drained, moderate permeability. Minor inclusion of 520E-Dumont gravelly loam, well-drained

Existing Stand

Overstory - Primarily DF, with occasional WF, IC, SP, 24”-60” DBH, canopy closures 30% to 70%, patchy distribution, 10-30 TPA.

Mid-Canopy – Primarily DF and WF with occasional IC, WH, madrone, chinquapin, 12”-22” DBH, 40%-80% canopy closures, mostly present where there are openings in the overstory, 100-200 ft² basal area per acre.

Understory – Mix of DF, WF, with infrequent WH, WRC, 3’-15’ in height, patchy distribution of conifers with overall low stocking. Shrubs include rhododendron, salal, tanoak, and madrone.

Stand History

These units have had past light harvest, likely of salvage. There are some large trees that were felled approximately 30-40 years ago and not yareded out, in a portion of unit 27-2b, and the decaying logs are present on the site.

Recommended Treatment

Commercial Thin / Regeneration Harvest

These units have small patches of younger co-dominant and mid-canopy conifers, 10”-24” DBH intermixed with patches of larger, older overstory conifers, generally over 24” DBH. In the areas of concentrations of older trees, harvest the merchantable conifers, over 20” DBH, leaving 8 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 these patches with a minimum of 1/3 of the leave trees without obvious defect (conk, insects, etc.).

In the patches of younger vigorous conifers, up to 24” DBH, thin these stands to allow for growth of the crowns of the residual conifers. Remove trees with crowns touching the

selected reserve trees. Thin from below removing the smaller less vigorous conifers. Leave trees should be the dominant, fast-growing conifers with healthy crowns, generally 30% or greater crown ratios. Retain 100 ft² basal area per acre in conifers in these areas of younger “second growth”. Retain up to 5 tree form hardwoods per acre, if present

Existing snags and coarse woody material should be retained on site. Future recruitment of snags and coarse woody material would come from residual trees in the stand after harvest.

Units 23-2, 33-2b

	Unit 23-2	Unit 33-2b
Location	31S-9W-23	31S-09W-33
HUC 7		
Acres	7 ac	5 ac
Aspect	West, Southwest	South, Southeast
Slope	30%-55%	40%-65%
Elevation	2500'-2600'	1900'-2200'
Ann. Precip.	60"-65"	70"-75"
TPCC	RTR	RTR
Site Index	110-120	120
Soils	1510F-Acker-Norling, gravelly clay loam, well-drained, moderate permeability	239G-Atring Vermisa, very gravelly loam, well-drained. 1510F-Acker-Norling, gravelly clay loam, well-drained, mod. permeability

Existing Stand

Overstory - Primarily DF, with occasional IC, SP, 20”-48” DBH, canopy closures 60% -80% in unit 23-2 and 50%-70% in unit 33-2b, 40-60 TPA in unit 23-2, 20-40 TPA in unit 33-2b, many trees with dead tops in unit 33-2b.

Mid-Canopy – Primarily DF, IC, CLO, madrone, and tanoak, 6”-12” DBH, light densities of 10%-30% canopy closure in unit 23-2, with dense areas in overstory gaps of 40-60% mid-canopy closures.

Understory – Mix of DF, IC, CLO, tanoak, madrone 3’-15’ in height, patchy in unit 23-2 but dense in canopy gaps in unit 33-2b primarily CLO, tanoak and madrone with very scattered conifers.

Stand History

Some past light harvest in both units. Unit 33-2b has open canopy in places with overstory slowly dying out and decay in many residual trees in overstory.

Recommended Treatment

Selection Harvest

Harvest merchantable conifers, over 20” DBH, retaining 15-18 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 generally be spaced throughout the unit, however leave tree retention should be concentrated in the rockier portions of the unit. The objective is to retain 30-40% canopy closure to assist survival of conifer regeneration as the units are rocky, droughty sites. This translates to approximately 45’-50’ bole spacing of leave trees. Retain up to 5 tree form hardwoods per acre, if present.

Existing snags and coarse woody material should be retained on site. Future recruitment of snags and coarse woody material would come from residual trees in the stand after harvest.

IV. Coarse Woody Material

Attached is the table depicting the amounts of coarse woody material present on a unit by unit basis. Also attached are the recommended amounts, by decay class, for the plant group represented in this project. Two units meet or exceed the mean lengths for all decay classes, unit 15-2 and 27-4, as shown by the survey for coarse woody material on this project. All other units are deficient in one or more decay classes but may have amounts greater than the mean in other decay classes. Green trees should be retained to recruit future coarse woody material. All units would have adequate green tree retention in residual trees except for regeneration harvest or overstory removal units. Therefore units 27-2a,b, 23-1, and 27-3b,c, would have 8-10 overstory trees retained instead of 6-8 as required by the Medford RMP/ROD for retention of large legacy overstory trees.

Willy Slide CWD (by condition class in total linear feet per acre)						
Unit	Class 1	Class 2	Class 3	Class 4	Class 5	ROD guidance
11-1	-	-	526'	175'	-	-
15-1	-	1596'	456'	1140'	456'	-
15-2	97'	3445'	1456'	2232'	1504'	49'

Unit	Class 1	Class 2	Class 3	Class 4	Class 5	ROD guidance
17-1	-	263'	614'	877'	350'	-
23-1	68'	68'	682'	273'	341'	68'
23-2	-	-	912'	-	-	-
23-3	-	-	684'	228'	-	-
27-1	-	950'	-	380'	1520'	190'
27-2	-	275'	551'	629'	511'	157' ± 30%
27-3	-	-	-	586'	195'	-
27-4	342'	342'	684'	342'	684'	-
27-5	-	-	1026'	342'	-	-
27-6	-	608'	760'	304'	-	304'
27-8	243'	970'	145'	825'	631'	49'
33-1		91'	152'	395'	395'	30'
33-2	-	-	147'	441'	147'	-
33-3	-	342'	342'	1026'	1710'	-

The ROD guidance column indicates how many linear feet of course woody debris exist, that is 16" diameter or greater and 16' or greater in length, and also in decay class 1 or 2

The Provincial Interagency Executive Committee (PIEC) has adopted guidelines for down (course) woody material (CWD) in accordance with recommendations of the Northwest Forest Plan (NFP). The guidelines are stratified by plant association groups, with recommended quantities of down woody material for each group. This Planning Area is most closely associated with the "Douglas-fir Moist" plant grouping. The recommendations for this group are:

Decay Class	pcs. 6-9"	pcs 10-19"	pcs 20+	Lgth/pc.	Av.Totl.length
1	1 (1)	1 (2)	0 (0)	45 ft.(11)	90 ft
2	6 (20)	6 (16)	1 (4)	31 ft.(21)	403 ft
3	8 (21)	8 (19)	2 (5)	29 ft.(17)	522 ft
4	10 (21)	5 (18)	2 (7)	32 ft.(25)	544 ft
5	2 (9)	11 (22)	1 (1)	22 ft.(32)	308 ft

(The numbers in parenthesis are the standard deviation for each column)

The mean number of pieces, by decay class, is used as the target for coarse woody material retention. The variability around that mean is quite large, as expressed by the standard deviation, so those amounts should not be considered as absolute requirements but they are used as targets for this project.

Organon Stand Growth Model Summary for Commercial Thin Stands

This table is a comparison of different treatments and the model growth projections of those stands with thinning from below and proportional at 3 different residual densities.

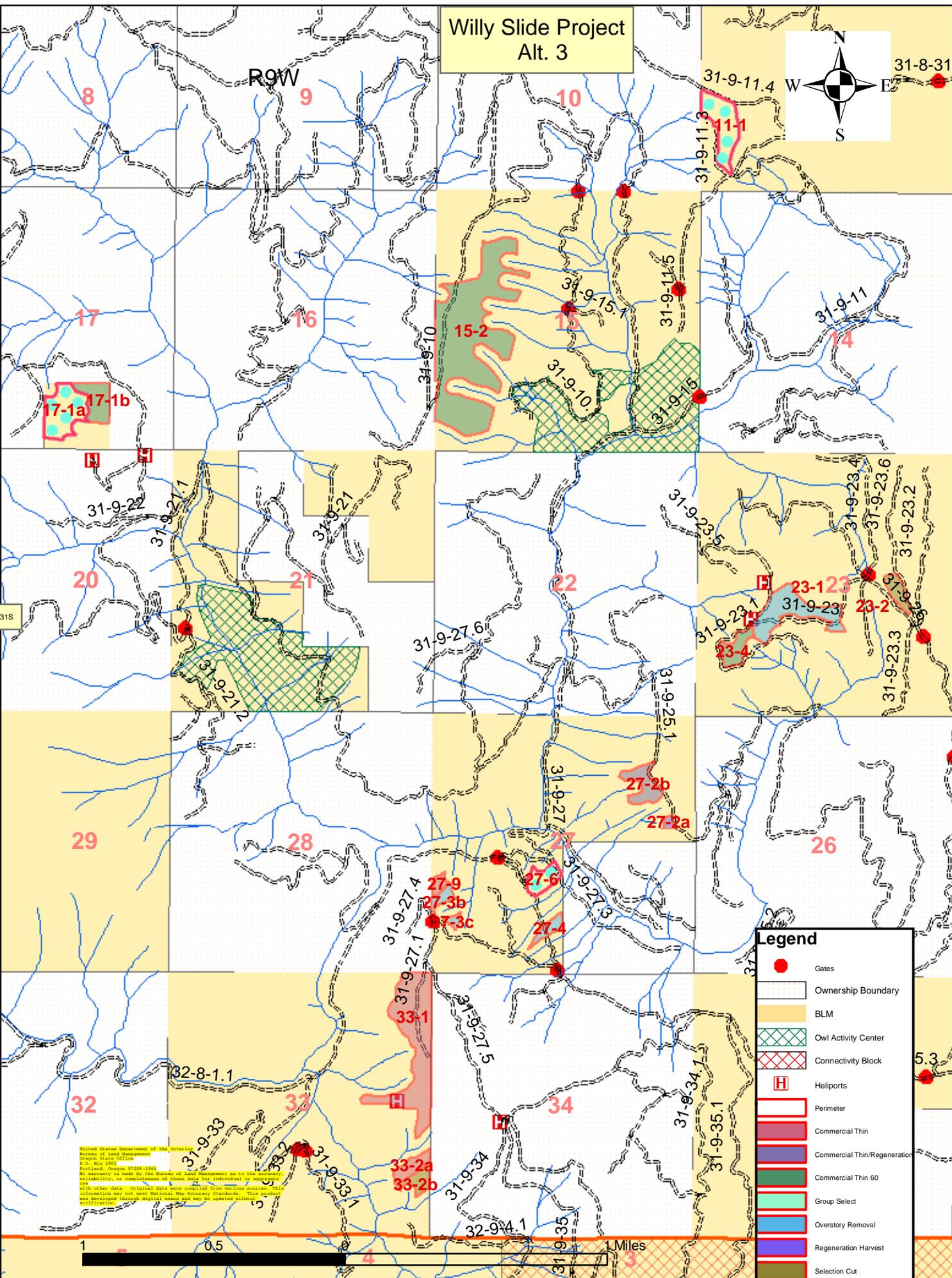
Willy Slide Commercial Thinning Unit Comparison						
	Unit 15-1		Unit 27-9		Unit 33-1	
	Thin/ 30yr.Gr CC	Total Vol. QMD, CC	Thin/ 30yr.Gr CC	Total Vol. QMD, CC	Thin/ 30yr.Gr CC	Total Vol. QMD, CC
100 ft ² residual Below	23,695 47,788 61%	71,483 18.2", 77%	19,738 42,863 52%	62,601 20.5", 63%	10,715 39,638 50%	50,353 22.3", 60%
100 ft ² residual Proportional	25,778 43,582 69%	69,360 15.3", 83%	22,870 40,410 63%	63,280 16.0", 77%	18,473 25,738 67%	44,211 14.1", 75%
120 ft ² residual Below	19,367 56,251 75%	75,618 17.7", 92%	15,825 50,592 65%	66,417 19.4", 78%	7,878 44,615 62%	52,493 20.6", 75%
120 ft ² residual Proportional	21,708 51,024 82%	72,732 15.2", 98%	18,892 47,349 76%	66,241 15.9", 91%	15,834 30,331 81%	46,165 14.0", 88%
140 ft ² residual Below	15,279 63,424 88%	78,703 17.1", 107%	12,146 57,288 78%	69,434 18.3", 93%	5,311 48,390 74%	53,701 19.2", 88%
140 ft ² residual Proportional	17,638 57,970 96%	75,608 15.1", 112%	14,915 53,827 88%	68,742 15.8", 104%	13,195 34,687 94%	47,882 14.0", 101%

Appendix D. Maps

Willy Slide Project Alt. 3



R9W



Legend

- Gates
- Ownership Boundary
- BLM
- Owl Activity Center
- Connectivity Block
- Heliports
- Perimeter
- Commercial Thin
- Commercial Thin/Regeneration
- Commercial Thin 60
- Group Select
- Overstory Removal
- Regeneration Harvest
- Selection Cut

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