

ENVIRONMENTAL ASSESSMENT
for the
WOLF TREE PROJECT

EA NUMBER OR-110-01-036

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

Responsible Official:

Lynda L. Boody, Glendale Field Manager
BLM District Office
3040 Biddle Road
Medford, Oregon 97504

WOLF TREE PROJECT

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**WOLF TREE PROJECT
ENVIRONMENTAL ASSESSMENT
EA# OR 110-01-036**

1.0 Introduction, Purpose and Need for Action

1.1 Introduction

The Glendale Resource Area of the Medford Bureau of Land Management (BLM) proposes management activities within the Wolf Tree Planning Area, located east of the community of Wolf Creek and Interstate 5 highway. The Planning Area is delineated by the Upper Wolf and Coyote sixth field watershed boundaries and within T 33S, R 5W, sections 3, 4, 5, 6, 7, 9, 10, 11, 13, 14, 15, 20, 21, 22, 23, 26, 27, 28, 29, and 30 in Josephine County. The BLM administers approximately 11,000 acres (52%) of the total 21,000 acres in the Planning Area. The remaining 48% is divided between state, county and private ownerships.

Proposed activities are planned only on BLM lands and include: harvesting timber, thinning young stands, fuel treatments, prescribed burning and road improvements. The King Wolf Timber Sale and the Coyote Pete Timber Sale are anticipated projects from this environmental assessment (EA) and are planned for 2002 and 2003. Other projects might also be done separately.

1.2 Purpose and Need for Action

The Wolf Tree Project would implement the Medford Resource Management Plan (1995), which states that the primary purposes of managing BLM-administered lands are the need for forest habitat and forest products. The Medford District Resource Management Plan (RMP) identifies land management objectives based on a series of Land Use Allocations (LUA). Included in the allocations are the General Forest Management Area (GFMA) and the Riparian Reserves (RR). One of the primary objectives for managing GFMA is to provide for a sustainable supply of commercial timber, consistent with other objectives. The Medford District RMP also includes the continued management of O & C lands for permanent forest production in accordance with other sustained yield principles and environmental laws (RMP, 17). Objectives for the RR include contributing to meeting the objectives of the Aquatic Conservation Strategy.

The Planning Area contains dense young conifer stands growing below optimal levels. Sedimentation in most of the watershed's streams is moderate to high, a condition that is largely a result of poorly designed and maintained roads. Therefore, fuels treatments are needed to treat vegetation to reduce the risk of wild land fire to BLM and private lands. Improving existing

roads on BLM lands would reduce sedimentation moving into streams. Streams in this watershed support Klamath Province steelhead trout as well as other fish, amphibians and aquatic invertebrates.

1.3 Scope of Environmental Analysis

1.3.1 Scoping Process

The first public meeting was conducted at the Wolf Creek Civic Center in Wolf Creek on June 27, 2000 for local residents. The initial Proposal included approximately 970 acres of regeneration harvesting, 100 acres of commercial thinning and 180 acres of pre-commercial thinning. Through public responses at the meeting, a field trip to review proposed treatment units was arranged and attended by 16 people on November 18, 2000. The third public meeting was held at the Wolf Creek Civic Center on February 13, 2001 to display updated information, such as field survey results and land use allocation maps. The Wolf Tree interdisciplinary team had not completed the analysis of ongoing survey results and compliance with higher level planning documents. Many potential harvest units were eliminated or reduced in acreage primarily due to Riparian Reserve buffers and red tree vole buffers.

1.3.2 Related EISs and Documents

The Wolf Tree Project environmental assessment is tiered to the broader Medford Resource Management Plan (1995), Record of Decision and Final SEIS for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl (Northwest Forest Plan, 1994). It also tiers to the Record of Decision and Final SEIS for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines (2001). The Grave Creek Watershed Analysis (1999) is incorporated by reference.

1.3.3 Relevant Issues

The relevant issues listed below were identified through the scoping process. An issue is an effect (or perceived effect, risk or hazard) on a physical, biological, social or economic resource.

- a. Supplying timber to the economy.
- b. Provide an Alternative that would implement Standards and Guidelines for protecting species under the Northwest Forest Plan (1994).
- c. Fire hazard and risk on BLM lands and protecting adjacent landowners from wild land fire.

- d. Harvesting of mature and old growth trees.
- e. Affects on visual quality from harvesting.

1.3.4 Issues Eliminated from Detailed Study

- a. Recreational development, particularly at Burma Pond, will be deferred because there is a lack of funding for recreation projects.
- b. Proposing units in the western Board Tree drainage of the Planning Area. The Grave Creek Watershed Analysis (1999) recommended that special consideration be given to this area in the short term to allow late-successional habitat to recover in Riparian Reserves and spotted owl core areas within the Grave Creek watershed.

1.4 Decisions To Be Made on This Analysis

The Glendale Resource Area Field Manager will:

- a. Choose the Alternative to implement.
- b. Determine whether the selected Alternative would have significant effects or not, and whether or not to prepare an environmental impact statement. If the impacts are determined to be insignificant, then a Finding of No Significant Impact (FONSI) can be issued and a decision can be implemented.

1.5 Applicable Required Coordination

National Marine Fisheries Service (NMFS) Biological Opinion.

United States Fish and Wildlife Service (USFWS) Biological Opinion

2.0 Description of the Alternatives

2.1 Overview of the Alternatives

This chapter describes the Alternatives and summarizes the environmental consequences of the Alternatives as described in Chapter 3 (CEQ § 1502.14). Alternatives are potential actions designed as alternate proposals for meeting the purpose and need of the project. They represent a reasonable range of proposals that respond to many of the relevant issues identified in 1.3.3. Relevant issues have also been mitigated through project design features.

2.2 Description of Alternatives

2.2.1 Alternative 1

This Alternative responds to supplying timber to the economy and reducing fire risk and hazard.

Silvicultural Treatments (Alt. 1)

Approximately 406 acres would be harvested (Table 1) and would include approximately 76 acres of regeneration harvest (RH), 61 acres of overstory removal (OR) and 269 acres of commercial thinning (CT). Harvesting would remove about 2.9 MMBF (million board feet). RH and OR would reduce the amount of late successional habitat by 137 acres in the Planning Area.

At least 6-10 standing large conifers and 2 large hardwoods per acre, as well as snags and down logs, would be left after regeneration harvesting or overstory removal. In some cases, additional trees would be retained for recruitment of coarse woody debris, to serve as potential snags, to compensate for trees lost to broadcast burning, to provide additional shade for seedlings, or to help retain moist conditions in talus habitat. Additional canopy would be retained to maintain habitat conditions for Special Status species. In the OR units, existing conifer reproduction would be retained to establish the next stand. In commercial thin (CT) units, the existing stand would be thinned to release the residual trees.

Following harvest, many of the units would receive site preparation treatments specified in Table 1. The regeneration harvest units would be reforested using planted nursery stock. Additional treatments, such as shade-carding, mulching, deer browse protection and controlling competing vegetation might be required to ensure adequate seedling establishment. Maintenance treatments would be implemented for up to ten years following harvest or until canopy closure was enough to reduce brush species growth.

Table 1. Summary of Proposed Harvest Units for Alternative 1

Unit	Acres	Harvest/Treatment System(1)	Yarding System(2)	Fuels Mgmt./ Site Prep.(3)	Estimated Vol/ acre (MBF)	Estimated Vol (MBF)
3-1a	12	RH	PS	SL(BR),P	10	120
3-1b	9	RH	PS	SL(BR),P	15	135
3-1c	6	OR	PS	SL(BR),P	5	30
4-3	15	RH	H	SL(BR),P	8	110
6-1A	6	OR	H	SL(BR),P,PCT	10	60
6-1B	2	OR	H	SL(BR),P,PCT	5	10
6-2	17	OR/FHR	H	SL(BR),P,PCT	10	170
9-4	14	CT	T	SL(BR),P,PCT	3	42
9-5	5	OR / CT	H	SL(BR),P	2	10
10-3	9	CT/FHR	PS	PCT, SL,P	2	18
10-4	12	CT/FHR	PS	PCT, SL,P	3	36
10-5	10	RH/CT	PS	SL(BR),P	10	100
10-7	6	CT/FHR	T/PS	SL(BR),P,PCT	4	24
11-2	10	CT/FHR	T	SL(BR),P,PCT	3	30
13-2	4	CT	PS	PCT, SL,P	8	48
14-5	18	RH/CT	H	P	10	180
14-6	5	CT	PS	None	8	40
14-8	28	CT	T/H	None	8	224
15-5	16	CT	H	P	8	128
21-3	4	CT	T,PS	P	8	32
22-2	12	CT	PS	P	5	60
22-4B	14	CT, FHR	PS	Sl(BR)P	3	42
22-5	4	CT	PS	P	5	20
22-8	10	CT	T	P	6	60
23-2	3	CT	PS	None	7	21
23-3	4	CT	PS	None	7	28
23-4	9	CT	PS	P	5	45

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Unit	Acres	Harvest/Treatment System(1)	Yarding System(2)	Fuels Mgmt./ Site Prep.(3)	Estimated Vol/ acre (MBF)	Estimated Vol (MBF)
27-1	9	CT	H	P	6	54
27-2	6	CT	H	P	8	48
27-3A	2	CT	PS	P, B	10	60
27-3B	3	RH	PS	B	7	21
27-4	23	CT	H	P	8	184
27-6A	10	CT	H	P	5	50
27-7	7	CT	PS	P	8	56
27-8A	2	CT	PS	P	6	12
27-8B	1	CT	PS	P	6	6
28-1	9	CT	PS	P	5	45
28-4	9	OR	H	P	10	80
28-5	4	OR	PS	P, B	10	40
28-6	2	CT, FHR	PS	P	3	6
28-8A	12	OR	PS	P, B	10	120
28-8B	8	CT	PS	p	5	40
28-9	7	CT	PS	P	7	49
28-11	9	CT	PS	P	5	45
30-1A	6	CT, FHR	PS	P, SI(BR)P	4	24
30-1C	4	CT	H	P	4	16
30-5	9	RH	PS	B	9	81
TOTALS	406					2860

(1) Harvest/Treatment Systems: Regeneration harvest units would retain 6-8 trees per acre (tpa) unless noted.

Regeneration Harvests

RH = Regeneration Harvest

OR = Overstory removal

Other Cuts

CT = Commercial thinning

PCT = Pre-commercial thin

(2) Yarding Systems:

Cable

PS = Partial suspension

Tractor

T = Tractor

Aerial

H = Helicopter

(3) Fuels Management/Site Preparation:

P	= Pile and burn	FHR = Fuels Hazard Reduction
S	= Spot burn	WUI = Wild land Urban Interface
B	= Broadcast burn	RDR = Rip designated skid roads
UB	= Underburn	Sl(BR) = Slash brush

Fuels Treatments (Alt. 1)

These treatments are in addition to post-harvest fuels management/site preparation listed in Table 1. Fuels projects would include urban interface treatments, ladder fuel reduction and creating defensible space for fire suppression efforts. Treatments within the Wolf Tree Project area include slashing, hand piling and burning (1,700 acres), under burning (16 acres) and mechanical slashing (45 acres). The majority of the acres would be treated for fuels hazard reduction (FHR). This treatment would treat small-diameter conifers, hardwoods, and shrub species to reduce the high risk to high-intensity wildfire. A small amount (110 acres) would be treated as wild land urban interface (WUI) units. These are areas at high risk to wildfire near residences. Areas to be treated are shown on the Fuels Hazard Reduction map in Appendix C and include unit numbers 5-1, 7-1, 9-1, 9-2, 9-3, 9-4, 9-6, 11-2, 14-9, 15-3, 15-4, 15-6, 15-7, 20-1, 21-2, 21-4, 22-4B, 22-6, 22-9, 22-11, 27-6B, 27-8A, 27-9, 27-10, 28-13, 28-14, 30-2, 30-4.

Dense areas of conifers, under 7" diameter at breast height (DBH) , would be thinned to various spacings (between 10 and 20 feet) leaving a mosaic of scattered groups of conifers. The slash from these operations would be hand piled and burned during the wet season. Hardwoods and shrubs under 7" DBH would be slashed, hand piled and burned with the conifer slash. Hardwoods greater than 7" DBH would be girdled and left standing except for, approximately 10 hardwoods per acre, that would be left untreated.

The objective is to reduce the fuel buildup in these areas, reduce ladder fuels, and release existing conifers to increase their growth rates.

Riparian Treatments (Alt. 1)

Although there would be no commercial harvest within Riparian Reserves, there would be slashing, hand piling and burning of sapling-size conifers, brush and hardwoods on approximately 390 acres. The intent is to reduce ladder fuels and fire hazard near heavily traveled roads. Ladder fuels, which consist of dense thickets of sapling conifers, manzanita, canyon live oak, and small madrone would be thinned, piled and burned. Overstory conifers and large hardwoods (>4 in. DBH) would not be cut. Slashed areas would not be planted since there are adequate seed sources and existing conifer regeneration.

Road Treatments (Alt. 1)

Table 2 provides a summary of road treatments. Approximately 5.3 miles of road would be decommissioned and 3.7 miles of road would have barricades placed in front of them. Full road decommissioning includes roads that have been determined to have no future need. They would be subsoiled, mulched or seeded. Cross drains, fills in stream channels, and potentially unstable fill areas would be removed to restore natural hydrologic flow. Barricaded roads are temporary closures to the general public. The road might be open for BLM administrative uses on a seasonal basis, depending upon impacts to the resources.

Table 2. Summary of Road Construction, Renovation, Drainage Improvement, and Road Decommissioning and Closing for the Wolf Tree Project Area.

Road Number	Road Name	Length (Miles)	Surface Type	Proposed Action	Haul Season
33-5-3.2 A	Levens Gulch	0.90	PRR	Ren	4/1-11/1
33-5-3.2 B	Levens Gulch	0.10	PRR	Block at BLM bdry.	4/1-11/1
33-5-3.2 C	Levens Gulch	0.30	PRR	Block at BLM bdry.	4/1-11/1
33-5-3.4	Lisa Lynn rd	0.24	PRR	Dec	4/1-11/1
33-5-3.5	Joan rd	0.55	PRR	DI	4/1-11/1
33-5-4.1 A	Levens Gulch sp 1	0.65	GRR	Ren	4/1-11/1
33-5-9.2	Levens Gulch sp 2	0.29	PRR	Ren	4/1-11/1
33-5-10 A	Wolf Creek	.24	ASC	RI	4/1-11/1
33-5-10 B	Wolf Creek	.38	ASC	RI	4/1-11/1
33-5-10 C	Wolf Creek	.32	ASC	RI	4/1-11/1
33-5-10 D	Wolf Creek	.64	ASC	RI Replace Pipe Arch	4/1-11/1
33-5-10 E	Wolf Creek	.57	ASC	RI	4/1-11/1
33-5-10 F	Wolf Creek	.97	ASC	RI	4/1-11/1
33-5-10 G	Wolf Creek	.30	ASC	Ren	4/1-11/1
33-5-10 H	Wolf Creek	.64	ASC	Ren	4/1-11/1
33-5-10 I	Wolf Creek	1.04	ASC	Ren	4/1-11/1
33-5-10 J	Wolf Creek	.76	ASC	Ren	4/1-11/1

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Road Number	Road Name	Length (Miles)	Surface Type	Proposed Action	Haul Season
33-5-10.1 A	Tennessee Gulch	1.20	PRR	Ren	4/1-11/1
33-5-10.1 B	Tennessee Gulch	1.67	PRR	Ren	4/1-11/1
33-5-10.2	Bummer Gulch	1.93	GRR	Ren	4/1-11/1
33-5-10.3 A	Wolf Ck Spur	0.60	ASC	RI	4/1-11/1
33-5-10.3 A	Wolf Ck. Spur	2.30	ASC	Ren	4/1-11/1
33-5-10.4	Tennessee Ridge	0.80	PRR	Ren	4/1-11/1
33-5-10.5	Wolf Ck. Headwater	0.60	PRR	Dec (Miner)	N/A
33-5-10.6	Wolf Pup	1.81	PRR	Ren	4/1-11/1
33-5-10.7	Bummer Blvd	0.85	GRR	DI	4/1-11/1
33-5-10.8	No rd record	0.29	NAT	Dec (miner)	N/A
33-5-11.1	Wolf Head	0.27	NAT	Dec.	6/1-10/1
33-5-14	Tennessee Bum	0.38	NAT	RI	6/1-10/1
33-5-14.4	Dutch Herman A	.76	ABC	Dec after County Junction?	4/1-11/1
Rd to County near 33-5-14.4	County	0.15	NAT	Dec	N/A
33-5-15.3	Burma pond	0.31	PRR	RI	4/1-11-1
33-5-21 A	Coyote Creek	0.80	ASC	Ren	4/1-11/1
33-5-21 B	Coyote Creek	1.50	ASC	Ren	4/1-11/1
33-5-21 C	Coyote Creek	0.46	ASC	Ren	4/1-11/1
33-5-21.1	Scholey Gulch	2.26	GRR	DI	4/1-11/1
33-5-22	Coyote Creek	1.74	PRR	Ren	4/1-11/1
33-5-22.1	Coyote Creek	1.21	PRR	Ren	4/1-11/1
33-5-22.3	Post King	0.35	GRR	Ren	4/1-11/1
33-5-22.4	Short Coyote	.35	PRR	DI	4/1-11/1
33-5-23.3 A	Coyote King rd	.12	GRR	RI	4/1 - 11/1
33-5-23.3 B	Coyote King rd	0.60	NAT	RI	4/1 - 11/1

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Road Number	Road Name	Length (Miles)	Surface Type	Proposed Action	Haul Season
33-5-23.4	Bum King	0.47	ABC	DI	4/1-11/1
33-5-26.2 A	Clark Creek	1.69	GRR	Ren	4/1-11/1
33-5-27	Coyote Creek	0.59	NAT	Dec	N/A
33-5-27 mp0.14 Rd S. of Creek	No # or name	0.40	NAT	Block. w/ berm	N/A
Spur rd sec 27	No # or name	0.70	NAT	Dec	N/A
33-5-27.1 West side Sec 27	Clark High	1.08	PRR	DI	4/1-11/1
33-5-28	King Midas	0.40	PRR	Ren	4/1-11/1
33-5-28.1 A	Scholey ML	2.16	GRR	Ren	4/1-11/1
33-5-28.1 B	Scholey ML	0.22	NAT	DI	6/1-10/1
33-5-28.3	Scholey Spur	0.50	GRR	DI	4/1-11/1
33-5-30	Colby-Miller Spur	0.66	ABC	Block	4/1-11/1
33-5-30.1	Miller Gulch R sp	0.60	ABC	DI	4/1-11/1
33-5-30.2	Miller Mobile	0.43	ABC	Block	4/1-11/1
33-5-30.3A	Miller Mobile 1	0.62	PRR	Block	4/1-11/1
33-5-30.3B	Miller Mobile 1	0.25	PRR	Dec	4/1-11/1
33-6-24 A	Miller Gulch	1.00	ASC	Ren	4/1-11/1
33-6-24 B	Miller Gulch	1.18	ASC	Ren	4/1-11/1
34-5-7 F	King Mtn Truck	0.17	NAT	RI	N/A
34-5-7 G	King Mtn Truck	0.09	NAT	RI	N/A
34-5-7 H	King Mtn Truck	1.62	ASC	DI	4/1-11/1
Spur rd sec. 14	Accesses Burma Pond	0.54	NAT	Dec	N/A
Spur rd sec 22	NE 1/4 sec 22	0.06	NAT	Dec	N/A
Spur rd sec 23	N/W 1/4 sec. 23	0.40	NAT	Block.	N/A
Jeep rd 33-5-30	Colby Miller SP	0.40	NAT	Block	N/A
Jeep rd 33-5-31.6	Miller Gulch G sp	0.40	ABC	Dec	N/A

Road Number	Road Name	Length (Miles)	Surface Type	Proposed Action	Haul Season
33-5-14.1	Wayne Barney	0.36	NAT	Block/pull CMPs	N/A

NAT Natural
 ASC Aggregate Surface Course
 ABC Aggregate Base Course
 GRR Grid Rolled Rock
 PRR Pit Run rock
 CMP Corrugated Metal Pipe

Dec Full Decommission (5.3 mi)

Ren Reshape road prism and drainage ditches, replace/add cross drain and bottom lay Culverts (26.8 mi)

DI Improve road Drainage by installing waterdips and converting ditched roads to an outsloped configuration. (8.5 mi)

RI Improve road by adding 4 to 8 inch lift of crushed aggregate surfacing (5.4 mi)

Block Barricade road with log or trench barricade (3.7 mi)

Culvert replacement (Alt. 1)

The main culvert for Wolf Creek on the 33-5-10 road is currently undersized for the recommended 100 year flood regime. The damaged structure would be replaced with a large structural plate pipe arch or culvert, or with a bottomless arch. To ensure passage of fish and other aquatic species, the pipe arch would be countersunk and laid at existing stream gradient.

2.2.2 Alternative 2

This Alternative is essentially the same as Alternative 1 except that additional species would be buffered under the Northwest Plan Survey and Manage and Protection Buffer protocol. Fungi surveys would be completed prior to implementation of this Alternative. The two known sites of *Prophytaon coeruleum* (blue-grey taidropper) and *P. dubium* (papillose taidropper) would be buffered.

Silviculture Treatments (Alt. 2)

Approximately 381 acres would be harvested (Table 3) and includes approximately 48 acres of regeneration harvest, 77 acres of overstory removal and 256 acres of commercial

thinning. Harvesting would remove about 2.6 MMBF (million board feet). The areas planned for RH and OR would reduce the amount of late successional habitat by 106 acres. Post harvest treatments would be the same as in Alternative 1.

Table 3. Summary of Proposed Harvest Units for Alternative 2.

Unit	Acres	Harvest/Treatment System(1)	Yarding System(2)	Fuels Mgmt./ Site Prep.(3)	Estimated Vol/ acre (MBF)	Estimated Vol (MBF)
3-1a	12	RH	PS	SL(BR),P	10	120
3-1b	7	RH	PS	SL(BR),P	15	105
3-1c	6	OR	PS	SL(BR),P	5	30
4-3A	3	RH	H	SL(BR),P	8	24
4-3B	5	RH	H	SL(BR),P	8	40
6-1A	6	OR	H	SL(BR),P,PCT	10	60
6-1B	2	OR	H	SL(BR),P,PCT	5	10
6-2	17	OR/FHR	H	SL(BR),P,PCT	10	170
9-4	17	CT	T	SL(BR),P,PCT	3	51
9-5	6	OR / CT	H	SL(BR),P	2	12
10-3	9	CT/FHR	PS	PCT, SL,P	2	18
10-4	12	CT/FHR	PS	PCT, SL,P	3	36
10-5	10	RH/CT	PS	SL(BR),P	10	100
10-7	6	CT/FHR	T/PS	SL(BR),P,PCT	4	24
11-2	10	CT/FHR	T	SL(BR),P,PCT	3	30
13-2	4	CT	PS	PCT, SL,P	8	48
14-5	17	RH/CT	H	P	10	170
14-6	5	CT	PS	None	8	40
14-8	13	CT	T/H	None	8	104
15-5	18	CT	H	P	8	146
22-2	12	CT	PS	P	5	60
22-4B	14	CT, FHR	PS	SI(BR)P	3	42
22-5	4	CT	PS	P	5	20
22-8	10	CT	T	P	6	60
23-2	4	CT	PS	None	7	28

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Unit	Acres	Harvest/Treatment System(1)	Yarding System(2)	Fuels Mgmt./ Site Prep.(3)	Estimated Vol/ acre (MBF)	Estimated Vol (MBF)
23-3	4	CT	PS	None	7	28
23-4	9	CT	PS	P	5	45
27-1	9	CT	H	P	6	54
27-2	6	CT	H	P	8	48
27-3A	2	CT	PS	P, B	10	60
27-3B	3	RH	PS	B	7	21
27-4	23	CT	H	P	8	184
27-6A	10	CT	H	P	5	50
27-7	7	CT	PS	P	8	56
27-8A	2	CT	PS	P	6	12
27-8B	1	CT	PS	P	6	6
28-1	9	CT	PS	P	5	45
28-4	9	OR	H	P	10	80
28-5	4	OR	PS	P, B	10	40
28-6	2	CT, FHR	PS	P	3	6
28-8A	15	OR	PS	P, B	10	150
28-8B	8	CT	PS	p	5	40
28-9	7	CT	PS	P	7	49
28-11	9	CT	PS	P	5	45
30-1A	6	CT, FHR	PS	P, SI(BR)P	4	24
30-1C	4	CT	H	P	4	16
30-5	3	RH	PS	B	9	27
TOTALS	381					2634

(1) Harvest/Treatment Systems: Regeneration harvest units would retain 6-8 trees per acre (tpa) unless noted.

Regeneration Harvests

RH = Regeneration Harvest

OR = Overstory removal

Other Cuts

CT = Commercial thinning

PCT = Pre-commercial thin

(2) Yarding Systems:

Cable

Tractor

Aerial

PS = Partial suspension

T = Tractor

H = Helicopter

(3) Fuels Management/Site Preparation:

P = Pile and burn

S = Spot burn

B = Broadcast burn

UB = Underburn

FHR = Fuels Hazard Reduction

WUI = Wild land Urban Interface

RDR = Rip designated skid roads

Sl(BR) = Slash brush

Fuels Treatments (Alt. 2) The same as Alternative 1.

Road Treatments (Alt. 2) The same as Alternative 1.

Culvert replacement (Alt 2) The same as Alternative 1.

2.2.3 Alternative 3

This Alternative highlights the need to reduce stand density on forested sites. The accumulation of vegetation has increased the risk and hazard of catastrophic wild land fire in the Planning Area. This Alternative responds to the relevant issue of protecting mature and old growth conifer trees. No regeneration harvesting or overstory removal would occur under this Alternative.

Silvicultural Treatments (Alt. 3)

This Alternative does not prescribe RH and OR units as in Alternatives 1 and 2. Approximately 369 acres would be commercially thinned. Harvesting would remove about 1.9 MMBF (million board feet).

Table 4. Summary of Proposed Harvest Units for Alternative 3.

Unit	Acres	Harvest/Treatment System(1)	Yarding System(2)	Fuels Mgmt./ Site Prep.(3)	Estimated Vol/ acre (MBF)	Estimated Vol (MBF)
3-1a	12	CT	PS	SL(BR),P	3	36
3-1b	9	CT	PS	SL(BR),P	3	27
3-1c	6	CT	PS	SL(BR),P	3	18
4-3	15	CT	H	SL(BR),P	3	45
6-1A	6	CT	H	SL(BR),P,PCT	3	18
6-1B	2	CT	H	SL(BR),P,PCT	3	6
6-2	17	CT/FHR	H	SL(BR),P,PCT	3	51
9-4	14	CT	T	SL(BR),P,PCT	3	42

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Unit	Acres	Harvest/Treatment System(1)	Yarding System(2)	Fuels Mgmt./ Site Prep.(3)	Estimated Vol/ acre (MBF)	Estimated Vol (MBF)
9-5	5	OR / CT	H	SL(BR),P	2	10
10-3	9	CT/FHR	PS	PCT, SL,P	2	18
10-4	12	CT/FHR	PS	PCT, SL,P	3	36
10-5	10	CT	PS	SL(BR),P	3	30
10-7	6	CT/FHR	T/PS	SL(BR).P,PCT	4	24
11-2	10	CT/FHR	T	SL(BR),P,PCT	3	30
13-2	4	CT	PS	PCT, SL,P	8	48
14-5	18	CT	H	P	3	54
14-6	5	CT	PS	None	8	40
14-8	28	CT	T/H	None	8	224
15-5	16	CT	H	P	8	128
21-3	4	CT	T,PS	P	8	32
22-2	12	CT	PS	P	5	60
22-4B	14	CT, FHR	PS	SI(BR)P	3	42
22-5	4	CT	PS	P	5	20
22-8	10	CT	T	P	6	60
23-2	3	CT	PS	None	7	21
23-3	4	CT	PS	None	7	28
23-4	9	CT	PS	P	5	45
27-1	9	CT	H	P	6	54
27-2	6	CT	H	P	8	48
27-3A	2	CT	PS	P, B	10	60
27-4	23	CT	H	P	8	184
27-6A	10	CT	H	P	5	50
27-7	7	CT	PS	P	8	56
27-8A	2	CT	PS	P	6	12
27-8B	1	CT	PS	P	6	6
28-1	9	CT	PS	P	5	45

Unit	Acres	Harvest/Treatment System(1)	Yarding System(2)	Fuels Mgmt./ Site Prep.(3)	Estimated Vol/ acre (MBF)	Estimated Vol (MBF)
28-6	2	CT, FHR	PS	P	3	6
28-8B	8	CT	PS		5	40
28-9	7	CT	PS	P	7	49
28-11	9	CT	PS	P	5	45
30-1A	6	CT, FHR	PS	P, Sl(BR)P	4	24
30-1C	4	CT	H	P	4	16
TOTALS	369					1888

(1) Harvest/Treatment Systems: Regeneration harvest units would retain 6-8 trees per acre (tpa) unless noted.

Regeneration Harvests

RH = Regeneration Harvest

OR = Overstory removal

Other Cuts

CT = Commercial thinning

PCT = Pre-commercial thin

(2) Yarding Systems:

Cable

PS = Partial suspension

Tractor

T = Tractor

Aerial

H = Helicopter

(3) Fuels Management/Site Preparation:

P = Pile and burn

S = Spot burn

B = Broadcast burn

UB = Underburn

FHR = Fuels Hazard Reduction

WUI = Wildland Urban Interface

RDR = Rip designated skid roads

Sl(BR) = Slash brush

Fuels Treatments (Alt. 3) The same as Alternative 1

Road Treatments (Alt. 3) The same as Alternative 1.

Culvert Replacement (Alt 3) The same as Alternative 1

2.2.4 Alternative 4

This is the No Action Alternative. No Action means that the Wolf Tree Project would not occur at this time. The No Action Alternative serves as the baseline for comparing the environmental consequences of implementing the action Alternatives. No harvesting would occur. Improvements to roads and decommissioning would not occur. The result would be a continuance of erosion from low maintenance road surfaces and sedimentation into streams. Riparian vegetation would continue to grow as in the other Alternatives. The risk and hazard of catastrophic wildfire would increase without fire hazard reduction. The culvert would not be replaced on Wolf Creek and

would be in jeopardy of failing during a 100 year hydrologic event.

2.3 Comparison of Alternatives

Table 5. Comparison of Treatments Between Alternatives.

Unit	Acres	Alternative 1	Acres	Alternative 2	Acres	Alternative 3
3-1a	12	RH	12	RH	12	CT
3-1b	9	RH	7	RH	9	CT
3-1c	6	OR	6	OR	6	CT
4-3	15	RH	8	RH	15	CT
6-1a	6	OR	6	OR	6	CT
6-1b	2	OR	2	OR	2	CT
6-2	17	OR/FHR	17	OR/FHR	17	CT/FHR
9-4	14	CT	17	CT	14	CT
9-5	5	OR / CT	6	OR / CT	5	CT
10-3	9	CT/FHR	9	CT/FHR	9	CT/FHR
10-4	12	CT/FHR	12	CT/FHR (40% canopy)	12	CT/FHR
10-5	10	RH/CT	10	RH/CT	10	CT
10-7	6	CT/FHR	6	CT/FHR	6	CT/FHR
11-2	10	CT/FHR	10	CT (40% canopy)	10	CT
13-2	4	CT	4	CT (need fall fungi surveys)	4	CT
14-5	18	RH/CT	17	RH/CT	18	CT
14-6	5	CT	5	CT	5	CT
14-8	28	CT	13	CT	28	CT
15-5	16	CT	18	CT	16	CT
21-3	4	CT			4	CT
22-2	12	CT	12	CT	12	CT
22-4B	14	CT, FHR	14	CT/FHR	14	CT/FHR

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Unit	Acres	Alternative 1	Acres	Alternative 2	Acres	Alternative 3
22-5	4	CT	4	CT	4	CT
22-8	10	CT	10	CT	10	CT
23-2	3	CT	4	CT	3	CT
23-3	4	CT	4	CT	4	CT
23-4	9	CT	9	CT	9	CT
27-1	9	CT	9	CT	9	CT
27-2	6	CT	6	CT	6	CT
27-3a	2	CT	2	CT	2	CT
27-3b	3	RH	3	RH		
27-4	23	CT	23	CT	23	CT
27-6A	10	CT	10	CT	10	CT
27-7	7	CT	7	CT	7	CT
27-8A	2	CT	2	CT	2	CT
27-8B	1	CT	1	CT	1	CT
28-1	9	CT	9	CT	9	CT
28-4	9	OR	9	OR		Drop
28-5	4	OR	4	OR(mollusk)		Drop
28-6	2	CT, FHR	2	CT, FHR (plants)	2	CT,FHR
28-8A	12	CT, OR (W Road)	15	CT, OR (lose 1 plant)		
28-8B	8	CT	8	CT	8	CT
28-9	7	CT	7	CT	7	CT
28-11	9	CT	9	CT	9	CT
30-1A	6	CT, FHR	6	CT, FHR	6	CT,FHR
30-1C	4	CT	4	CT	4	CT
30-5	9	RH	3	RH (Mollusks)		Drop
	406		381		369	

Table 6. Summary of Comparisons Between Alternatives.

TREATMENTS	Alternative 1	Alternative 2	Alternative 3	Alternative 4 No Action
Regeneration (acres)	76	48	0	0
Overstory Removal (acres)	61	77	0	0
Commercial Thin (acres)	269	256	369	0
Harvest volume	2,900 MBF	2,600 MBF	1,900 MBF	0
Fuel hazard Reduction (acres)	1870	1870	1870	0
Late seral habitat reduced (acres)	137	127	0	0
Roads decommissioned	5.3 miles	5.3 miles	5.3 miles	0
Existing road improvement	40.7 miles	40.7 miles	40.7 miles	0
Barricade road	3.7 miles	3.7 miles	3.7 miles	0

2.4 Project Design Features Common to All Alternatives

Project design features (PDFs) are specific measures included in the design of the proposed Alternatives to minimize adverse impacts to the human environment. They provide specific criteria on how Standards and Guidelines in the RMP would be met, consider key issues mentioned in the Grave Creek West Watershed Analysis and relevant issues identified by the Wolf Tree interdisciplinary team (IDT). Many project design features are included in the Medford District RMP. These include Best Management Practices (BMP) as described in Appendix D of the RMP.

If changes to the PDFs are needed during project implementation, they would be reviewed through

the ID team and the Field Manager, and a revised EA would be prepared if necessary, before the change is implemented.

Fish/Streams/Riparian Habitat

Riparian Reserves widths follow Standards and Guidelines of the Northwest Forest Plan (1994). On intermittent and non-fishery, perennial streams the reserve width would be at least one site potential tree length (170 feet) on each side of the stream for this sale. On fish streams the width would be 340 feet on each side. No unstable slopes or other factors were identified that required enlarging the Riparian Reserves to meet Aquatic Conservation Strategy objectives. Units adjacent to fish habitat are: 9-4B, 10-4, 10-3, 15-5, 30-1A, 30-1C, 28-12, 28-1, 27-1, and 27-2.

No commercial timber harvest would be allowed within Riparian Reserves. Trees within one tree length of the Riparian Reserves would be directionally felled away from the reserve.

Springs would be buffered 100' to protect the water source.

Approximately 40 miles of existing roads would have drainage improvement to reduce the potential for future damage from erosion and plugged culverts.

All road renovation or drainage improvement that involves work in stream channels, when water is present, would be restricted to the Oregon Department of Fish and Wildlife (ODFW) recommended work period of June 15 - September 15

When replacing bottom-lay culverts (stream channels), streams would be diverted around the work site whenever reasonably feasible in order to limit movement of sediment off-site during the low flow period. The diverted stream would not be returned to the channel and allowed to flow through the project site until all in-stream work has been completed.

Helicopter landings, outside the road prism, would be ripped and planted with conifers after use.

Disturbed areas would be mulched with material (e.g., straw, bark, wood chips) which is free of noxious weeds.

Visual Quality

The visual quality objectives for the Planning Area is to allow major modifications of existing character of landscapes (RMP, 70). Commercial thin units near Golden Coyote wetlands would retain additional trees to reduce the effects on visual quality to adjacent landowners and local residents.

Roads

Roads shown in Table 2 would be fully decommissioned, including removing culverts, ripping with a winged ripper, water-barring, and mulching.

Decommissioning of existing roads, as shown on Table 2, would be done between July 1 and October 15 of the same year.

Landings in RH and OR units would be ripped and planted with conifers upon completion of harvest

Helicopter landings would be ripped and planted after harvest.

Road renovation, maintenance, drainage improvement and log hauling (except roadside brushing) would be restricted to the seasons described in Table 2. If roads are sufficiently dry outside this season, activity may be allowed if approved by the Field Manager.

Heavy equipment would be washed, prior to entry on federal lands, to remove soil and plant parts to reduce the spread of noxious weeds and disease into the project area.

Late-Successional Forest Habitat

All activities associated with this project would comply with the Biological Opinions issued by United States Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) resulting from formal consultation processes. While formal consultation with USFWS on this project has not yet been completed; it would be done prior to selling of a timber sale.

Blasting would not take place within 1 mile of known spotted owl nest sites between March 1 and September 30 unless non-nesting is confirmed each year. This PDF may be waived if the Glendale Resource Area biologist determines non-nesting as above.

All non-danger snags in all units, would be protected to the greatest extent possible by avoiding damage by yarding, burning or other management practices. In addition to snags already protected, trees retained for Survey and Manage protection would continue to provide sources of coarse woody material (CWM) and snags. If it is necessary to fall these snags, they would remain on the site to provide additional large down wood.

Bats

Harvest would be prohibited within 250 feet of sites containing bat roosts: this currently affects unit 22-9. The abandoned adit in the area would be grated with steel bars to prevent human disturbance of the site, which is used by several species for breeding and the 1/10 mile spur road would be obliterated. In the general sale area, large-branched wolf trees and loose-bark snags would be retained where possible to provide suitable roosting habitat for bats.

Red Tree Vole

Red tree voles occur throughout the Planning Area. Since protection for this species also was not amended, “Any management that occurs within a Habitat Area should not remove or modify nest trees, the canopy structure of the stand, or remove any of the dominant, codominant, or intermediate... crowns” (p. 2 of Management Recommendations for the Red Tree Vole).

Botany

Populations of Special Status, Threatened or Endangered, or Survey and Manage vascular plants, lichens, bryophytes and fungi would be buffered by about 100 feet. Survey and Manage species would have 200 foot buffers where they occur in timber harvest units that would retain less than 40% canopy cover (regeneration and overstory removal prescriptions). Buffers may extend across roads, as trees across roads provide shading. Timber harvest, burning, thinning, yarding corridors or road construction would not occur within these buffers. An exception is that underburning may occur within populations of *Camassia howellii* or *Silene hookeri* var. *bolanderi* in the fall after the lower layers of duff are wet, or in the winter, before March 1.

For Special Status species, buffers would occur around Bureau Sensitive and Assessment species but not Tracking Species. For Survey and Manage Species, the species to be buffered would depend on the Alternative chosen.

Commodity Production

Partial suspension and yarding corridors would be minimized to reduce compaction. In commercial thin units, corridors would be at least 150 feet apart at the widest part.

Tractors would be restricted to yarding between June 15 and October 15 to avoid compacting moist soils. These dates may be extended by the Authorized Officer in dry conditions.

Tractor yarding would be restricted to slopes of 35 percent or less.

In all tractor units, tractors would be required to use designated skid roads. Existing skid roads would be used whenever possible.

In all tractor yarding units, tractor blades would not be allowed. This provision would ensure minimal soil displacement and would help to retain the organic material on site.

Skid roads in all tractor units would be discontinuously ripped and waterbarred upon completion of harvest.

In overstory removal (OR) and commercial thin (CT) units, the following measures would be required to minimize damage to the residual stand:

- trees would be felled toward the lead,
- log lengths would be less than 35 feet long,
- cables would be re-spoiled between corridors.
- areas of conifer regeneration would be protected as much as possible

In OR units, yarding would be completed within one month of falling to minimize damage to conifer regeneration.

Slashing, as called for in Tables 1,3 and 4, would occur within two months of completion of harvest.

Fire and Fuels

Patrol and mop-up of treated units (either underburns or pile burns) would occur until no smokes were showing to prevent burned areas from re-kindling and becoming an escaped fire.

Controlled burns and pile burning would be conducted during a time of year when the likelihood of fire escaping into the tree canopy is lowest, but could occur during any time of year under appropriate weather conditions.

Piles would not be closer than 10' to reserved trees, 25' to wildlife trees with nest structures, or 25' to a unit boundary.

To reduce potential impacts to songbirds, piles would not be burned from April through July.

Special treatment guidelines for legacy trees providing remnant habitat for fungi and bryophytes would be applied. Legacy trees are defined as conifer overstory trees left from original cutting--the largest trees growing within the unit. No hand piling, hand pile burning or under burning would occur within the drip-line of legacy trees.

Slash piling/ burning would be done within the Riparian Reserves except as follows. For fish bearing, permanently flowing non-fish-bearing streams, seasonally flowing/intermittent streams and other riparian areas (i.e. ponds, reservoirs or wetlands) a 50' no treatment buffer would be retained from the edge of the riparian vegetation or as described in the Record of Decision Standards and Guidelines (1994) and would be delineated during project implementation.

Slash piles would not be constructed on logs, stumps, talus slopes, in roadways or drainage ditches.

Mechanical treatments implemented would follow the Northwest Forest Plans reserve widths according to stream use.

Burning would be done in the fall/winter season after significant rainfall has occurred.

All piles would be ignited except those within a designated no treatment zone of a Riparian Reserve, S&M, or T&E buffers.

Western pond turtle. To protect duff used by overwintering turtles, no prescribed underburns would take place on any south, southwest or west aspects within approximately 0.3 miles of either pond or creek.

Air Quality

All prescribed burning would comply with the requirements outlined in the Oregon State Implementation Plan (SIP). All Alternatives have been analyzed and have been found to conform with the SIP and all burning would take place outside of a designated non-attainment area. Therefore, no further conformity analysis would be necessary

To conform with air quality standards and guidelines, all prescribed burning would be managed in a manner consistent with the requirements of the Oregon Smoke Management Plan (part of SIP) 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 produce the least amount of residual smoke possible. 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.

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

Cultural

To mitigate the impact of logging activities on collapsed and standing structures; the area (including associated can dumps/ artifact scatterers) shall have a 1 to 2 tree length buffer around the site. The site shall be flagged with orange and black flagging.

To mitigate the impact of logging activities on the mining ditches, trees shall be logged utilizing

suspension or partial suspension methods.

To mitigate the impact of prescribed fire on wooden structures a fire line shall be placed around the structure. No mitigating actions need to be taken for prescribed fire on pre historic sites or historic can dumps with no associated wooden structures.

Noxious Weeds

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

Only logging and construction equipment inspected by the BLM shall be allowed to operate within the Planning Area, or in the immediate vicinity of the planning Area. All subsequent move-ins of logging and construction equipment shall be treated the same as the initial move-in.

Logging and construction equipment would be visually inspected by a qualified BLM specialist, to verify that the equipment has been reasonably cleaned.

Areas that are burned along the roads and infested with meadow knapweed shall be planted with a native grass seed mix (if available) or other grass mix. This would help reduce the spread of the weed.

2.5 Project Design Features Specific to Each Alternative

The following project design features would be implemented differently in the various Alternatives.

Alternative 1 and 3

These Alternatives would include protection measures described in the Record of Decision and Standards and Guidelines for the Supplemental Environmental Impact Statement, for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures, dated October, 2001.

Botany

For Survey and Manage Species, buffers would occur around Category A, B, C, D and E species.

Alternative 2

This Alternative would include protection measures described in the Record of Decision Record for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl (1994).

Late-successional Forest Habitat

Molluscs. For Alternative 2, known sites of *Prophysaon coeruleum* (blue-grey taildropper) and *P. dubium* (papillose taildropper) would be buffered. The extent of the protection depends—as suggested by the Management Recommendations for Terrestrial Mollusk Species: *Prophysaon coeruleum*: Blue-Gray Taildropper and *Prophysaon dubium*, Papillose Taildropper—on the abundance of the species in that portion of the Planning Area. Since both species meet other required criteria for being considered “locally common,” their “locally common” status hinges on whether there is at least one site per 10 acres in any given portion of the timber sale. Where they are that common, one of two strategies are available: Either a no-cut reserve of at least 1 site potential tree’s length distance around the site would be designated or limited thinning (down to a 40 per cent canopy closure) over the stand would be allowed. The objective would be to protect the microclimatic conditions for the taildropper.

Botany

For Survey and Manage Species, buffers would occur around Strategy 1 and protection Buffer Species. Additional surveys for fungi would be required under this Alternative.

3.0 Environmental Consequences

3.1 Introduction.

This chapter describes the environmental consequences and forms the scientific and analytic basis for the comparisons in Chapter II (40 CFR § 1502.16). It describes the probable environmental consequences of each Alternative to relevant issues and to resources that might be affected as determined by interdisciplinary team specialists. The environmental consequences might not be adequately addressed in the Final Resource Management Plan/Environmental Impact Statement BLM, dated June, 1995 (RMP/EIS) which would result from implementation of the Alternatives. The following critical elements (BLM Handbook) were analyzed under this EA and are not present or would not be affected by the Alternatives: areas of critical environmental concern (ACEC); Native American religious sites; prime or unique farmlands; floodplains. In addition, hazardous waste or materials are not known to be located in the Planning Area.

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.

3.2 Soils and Productivity

3.2.1 Affected Environment (Soils and Productivity)

Soils are derived from metasedimentary and metavolcanic rock types. Soils associated with metasedimentary rocks tend to be deeper and have more nutrients available. Soils developed from metavolcanic rock types tend to be shallow and have less nutrients and soil development than the sedimentary. Organic matter plays an important role in the productivity of the metavolcanic soils (Grave Creek WA, 1999).

3.2.2 Direct Effects Soils and Productivity

Alternatives 1, 2, and 3

Direct effects harvesting depends on harvest techniques. Tractor skidding would displace soils and break up the fungal mats and organics. Growth potential in skid trails cleared of organics would be reduced for a 10 to 20 year period until organic litter is redeposited on-

site. Compaction of soils from tractor yarding would decrease water infiltration and air space thereby reducing soil moisture and pore space for rooting. However, ripping with discontinuous water dips would reduce effects of compaction by 80%. Past experience and monitoring of ripping indicates little or no direct impacts from erosion or reduction in growth potential.

Some compaction would occur during cable yarding and would be minimized by one end suspension. The expected impact to harvest units would be less than 6% compaction. Little or no productivity loss is expected in the long term.

Helicopter yarded units would experience very little site disturbance as a result of harvest. All units were inspected for stability of slopes and checked against records for Timber Production Capability Classification (TPCC). There are no areas of instability in any of the units. No effects are anticipated in Riparian Areas as harvest activities are not planned within them.

Underburning and slash piling would reduce the vegetation shrub and seedling layer. This is expected to reduce evapo-transpiration on-site for about 5 years. Effects of burning are described in the Medford District Resource Management Plan\Environmental Impact Statement. No effects greater than those described in the document are anticipated.

Decommissioning of roads would place land back into production and reduce erosion. It would also reduce vehicle access to lands previously open to the public for hunting, mining, and recreation. Renovation of roads would reduce active erosion from road surfaces and correct drainage problems currently occurring in the Planning Area.

In terms of overall disturbance levels Alternative 1 would have the most, followed by Alternative 2 and then Alternative 3 (Tables 7, 8 9). The difference is the amount of acreage under each harvest type.

Alternative 4 (No Action Alternative)

Effects described under the action Alternatives would not occur. Improvements to roads and decommissioning would not occur. The result would be a continuance of erosion from low maintenance road surfaces that may impact streams through sedimentation. The risk of culvert failure on Wolf Creek would continue. Riparian vegetation would continue to grow as in the other Alternatives and be at greater risk to wildfire.

Table 7. Upper Wolf Site Disturbance Levels.

UPPER WOLF HUC6	Acres RH	Acres OR	Acres CT	Total Harvest Acres	Acres HUC6	% Harvest
Alt1	64	36	111	211	11,162	1.9
Alt2	42	49	102	193	11,162	1.7
Alt3	0	0	211	211	11,162	1.9
No Action	00	00	000	000	11,162	0.0

Table 8. Coyote Site Disturbance Levels.

COYOTE HUC6	Acres RH	Acres OR	Acres CT	Total Harvest Acres	Acres HUC6	% Harvest
Alt1	12	25	158	195	9,844	2.0
Alt2	06	28	154	188	9,844	2.0
Alt3	00	0	158	158	9,844	1.7
No Action	00	00	000	000	9,844	0.0

Table 9. Wolf Tree Project Area Site Disturbance Levels.

WOLF TREE PROJECT AREA	Acres RH	Acres OR	Acres CT	TOTAL Harvest Acres	Acres Grave Creek HUC5	% Harvest
Alt1	76	61	276	406	104,371	0.4
Alt2	48	77	263	381	104,371	0.37
Alt3	0	0	376	369	104,371	0.36
No Action	00	00	000	000	104,371	0.00

3.2.3 Cumulative Effects on Soils and Productivity

In the long term, due to decommissioning of roads and ripping of existing tractor trails, additional acreage would be available for production. Soils would recover with time with the reduction in

existing compaction. With only 72 acres of tractor logging, followed by ripping of the skid trails, it is unlikely that there would be significant change in the existing situation at the watershed or sub basin scale.

3.3 Hydrology and Riparian Zones.

3.3.1 Affected Environment (Hydrology and Riparian Zones)

Wolf Creek and Coyote Creeks are fish streams that support cutthroat and other aquatic species including steelhead. ODFW surveys of Grave Creek and its tributaries indicate an absence of Coho salmon juveniles in Wolf Creek or Coyote Creek. Currently Wolf Creek and Coyote Creek are considered water quality limited streams by Oregon Department of Environmental Quality. Temperature in both streams exceed a standard established for anadromous fish species of greater than 64 degrees F over a 7 day period.

The main culvert for Wolf Creek on the 33-5-10 road is currently undersized for the recommended 100 year flood regime and in jeopardy of failing during this event. Settling or damage to the structure has reduced the carrying capacity by about 20%. The bottom of the structure is currently cobble and boulder lined and provides good migration for all aquatic species.

3.3.2 Direct Effects on Hydrology and Riparian Zones

Alternatives 1,2 and 3

Increased stream sedimentation that results from renovation, decommissioning and culvert replacement would not be detectable at the Project Scale Hydrologic Unit Code 6 (HUC6) because activities are dispersed across the sub-watersheds and would follow standard BMPs and PDFs. These activities would decrease the amount of road-generated stream sediment over the long term. Coho salmon would not be adversely affected by the action because they are not known to inhabit the watershed at the current time. There is active periodic placer mining both upstream and downstream of the site that may contribute more sediment and riparian change than replacement of the culvert.

Peak flows would not measurably increase under the action Alternatives because (a) more than 90% (Grave Creek Watershed Analysis, 1999) of the forested acres in each sixth field sub-watershed are properly functioning hydrologically, having recovered from past timber harvest and wildfire (b) road density would not increase (c) drainage improvement and renovation, including outsloping and adding water dips on 35 miles of road, in addition to decommissioning another 5 road miles, would route water from ditchlines to forest soils rather than roadside ditches into streams (e) Riparian Reserves would tend to utilize excess groundwater from up-slope where vegetation has been removed through timber harvest (f) soil depth is adequate in harvest units to allow precipitation to percolate into soil during

storm events for slow release.

All or portions of many of the harvest units in both 6th field HUCs are in the transient snow zone (roughly exceeding 2500 ft elevation; eight of 20 units in Upper Wolf and 14 of 26 units in Coyote). Rain-on-snow events on these timber harvest units is not expected to result in increased water yield because under Alternatives 1 and 2, over 51% of harvest acreage in the Upper Wolf sub-watershed is commercial thin and 81% is commercial thin in the Coyote sub-watershed. In addition, the total harvest acres in each 6th field sub-watershed is only about 2% of total sub-watershed acres. Most OR units have a well-developed understory that would substantially reduce the time required for full hydrologic recovery following timber harvest.

Summer stream flows are not expected to decrease as a result of timber harvest because riparian treatments would be no closer than one tree length of any stream and two tree lengths along fish bearing streams and would not encourage growth of alder, maple or other hydrophyllic vegetation. Shade provided by streamside vegetation would be protected.

The 50 foot buffer strip adjacent to streams in Riparian Reserve units with fuels treatment would be adequate for filtering any sediment that may be generated by burning piles in the Riparian Reserve. Water temperatures would not increase because there is no commercial harvest in Riparian Reserves and overstory conifers and hardwoods would not be slashed in any RR where ladder fuel reduction is proposed.

In addition to reducing the potential for intense fire in riparian and upland habitats, vegetation treatments in selected Riparian Reserves would accelerate the growth rate of residual conifers and hardwoods and therefore the development of late successional characteristics of the treated Riparian Reserve acreage.

Alternative 4 (No Action)

Current conditions would have no effects. Sediment and erosion would likely continue due to minimal road maintenance. Riparian Reserves would continue to mature as in other Alternatives.

3.3.3 Cumulative Effects on Hydrology and Riparian Zones

Due to the very limited amount of regeneration and overstory harvest there is little effect anticipated on increasing flood potential within the Planning Area. Low gradient streams in the area have been extensively altered by current and past mining. Most first and second order streams have vegetated riparian zones and stable banks. The larger streams particularly in lower elevations are wide enough to handle flood flows. Riparian zones would remain intact and

continue to grow into more mature stages thereby maintaining the water temperatures if left alone by placer miners. Short term sediment increase over background level may occur as a result of road renovation but would quickly decrease after the first rains of the years.

Replacement of the Wolf Creek culvert would have short term effects from sediment from disturbance of the channel during installation. This could affect feeding and respiration of aquatic organisms for a short period of time. The effects would diminish downstream from the site and would return to pre-disturbance levels with the first rains of the season. It is thought that the long term benefit of ensuring sufficient conveyance for peak flood flow would reduce chances for road failure and subsequent large surge of sediment that would result.

Recent harvest activities on private lands removed most of the commercial size conifer trees using various harvest techniques. The hardwood component is generally intact and ground cover has re-vegetated most of the disturbed areas. The majority of activity on private lands has occurred in the past 10 to 15 years and has healed to a great extent. Although the conifer regeneration is early seral (0 to 30 years) most of the remaining hardwoods are older than thirty years and function hydrologically like mature forest stands.

Cumulative analysis of hydrologic effects within the Planning Area revealed that about 10% of the landscape would be impacted hydrologically in both upper Wolf Creek and Coyote sub-watersheds. This is considered well within natural variability for the area. It is acknowledged that disturbance and harvest on private and other non federal lands would continue to occur at some low level over the next several decades until private forests regrow to harvest age. The cumulative effect of road decommissioning would have little effect in these highly roaded watersheds. Renovation and storm proofing would decrease sediment transport from upslope to streams in the long term.

Present conditions within the sub-watersheds (Upper Wolf and Coyote) indicated a 92% and 90% percent hydrologic recovery based on available data from the Grave Creek Watershed Analysis (1999). Alternative 1 would decrease the percentage of recovery to 90 and 88% respectively. Alternatives 2 would have essentially the same impact. There would be only a slight reduction of hydrologic impacts in Alternative 3 compared to 1 and 2. Impacts under the No Action Alternative are similar to those described under direct effects.

3.4 Botany

3.4.1 Affected Environment (Botany)

Special Status, Survey and Manage Threatened or Endangered Vascular Plants

Surveys were conducted in the spring of 2000. Some additional vascular plant surveys are to be conducted in 2001. The following species were found during surveys.

Allium bolanderi var. *mirabile* and *Asarum caudatum* var. *novum* are Bureau Tracking species and do not require protection. The former often grows on relatively barren sites, and is somewhat unlikely to be disturbed, while the latter is found within Riparian Reserves.

Camassia howellii is a Bureau Sensitive species and grows on mostly open sites, on serpentine soils, and *Silene hookeri* var. *bolanderi*, a Bureau Assessment species, in open woodlands and forest edges. Neither appear to require an interior forest microclimate, or old growth conditions. *Camassia* is often found growing in full sun, and was observed to resprout after early spring (March 3) burning in the Coyote Creek Junction Fuels Reduction Project.

Cypripedium fasciculatum and *Cypripedium montanum* are interior forest species and are both Survey and Manage, and Special Status species.

Fritillaria gentneri is listed endangered under the Endangered Species Act. It has been found in the Glendale Resource Area, and the Planning Area is within its range, as determined by Andy Robinson of the USFWS. However, it was not found in the timber sale surveys, although it may be found during the fuels unit surveys.

Special Status, and Survey and Manage Non-vascular Plants - Lichens, Bryophytes and Fungi

Surveys were completed in the spring of 2000 for lichens, bryophytes, and spring fungi using existing protocols. Surveys for fall fungi within the Upper Wolf occurred in the fall of 2000. These surveys were for Strategy 2 and Protection Buffer Species under the Northwest Forest Plan. Surveys for Survey and Manage and Special Status lichens and bryophytes are being conducted in the Wolf Tree fuels units. The following non-vascular plant species were found within the Planning Area.

Table 10. Non-Vascular Plant Species and Status.

Species	NWP status	S&M ROD status	Sites
<i>Bondarzewia mesenterica</i>	1,2,3	B	1
<i>Buxbaumia viridis</i>	Protection Buffer	D	44
<i>Cantharellus formosus</i>	3,4		1
<i>Cantherellus tubaeformis</i>	3,4	D	1
<i>Clavariadelphus</i>	3,4	B	1
<i>Clavulina cristata</i>	3,4		1
<i>Dendriscoaulon</i>	1,3	B	14
<i>Gymnopilus punctifolius</i>	1,3	B	2
<i>Gyromitra californica</i>	3,4	B	1
<i>Gyromitra esculenta</i>	3,4	F	3
<i>Gyromitra infula</i>	3,4	B	3
<i>Helvella compressa</i>	1,3		3
<i>Helvella elastica</i>	1,3	B	2
<i>Helvella maculata</i>	1,3	B	1
<i>Otidea onotica</i>	3, Protection Buffer		33

<i>Phaeocollybia californica</i>	1,3	B	3
<i>Phaeocollybia dissiliens</i>	1,3	B	3
<i>Phaeocollybia olivacea</i>	3	B	5
<i>Plectania milleri</i>	1,3	B	121
<i>Ptilidium californicum</i>	1,2, Protection Buffer		10
<i>Ramaria rubrievanescens</i>	1,3	B	5
<i>Ramaria rubripermanens</i>	1,3	B	2
<i>Sarcosoma latahense</i>	1,3	B	32
<i>Sarcosoma mexicana</i>	3, Protection Buffer	F	9
<i>Ulota megalospora</i>	Protection Buffer		1

NWP status Those species to be managed under one of the four categories under the Survey and Manage provision of the Northwest Forest Plan (1994).

S&M ROD status Those species to be managed under one of the six categories under the Record of Decision and Final SEIS for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines (2001)

3.4.2 Direct Effects on Botany

Management recommendations for the Survey and Manage species require the maintenance of late-successional forest structure, soil conditions, and microclimate around known sites, and, for some species, the prevention of snag and stump loss through prescribed fire (USDA-USDI 1996, Castellano and O’Dell 1997).

Buffers would provide protection to plant populations which could be impacted by timber harvest, pile burning and ground disturbance, and would protect interior forest microclimate. No effects are anticipated to those Special Status, or Survey and Manage plants that require protection. Some populations of species that do not require protection (Tracking species, S&M category F species) may be extirpated, although others would not, as they fall within areas protected for other resources.

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).

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 the 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. Burning would generally not be done in buffers, as some plants would be killed by direct heat.

Underburning can occur within populations of *Camassia howellii* or *Silene hookeri* var. *bolanderi*

in the fall, or winter, before March 1.

No effects are anticipated to threatened or endangered plants. *Fritillaria gentneri* was not found in the Planning Area but would be protected if found.

Alternative 1

Buffers would occur around Category A, B, C, D and E species. Some populations of Survey and Manage fungi could be extirpated because surveys are no longer required and their sites would not be protected. However, existing fungi sites found during previous surveys (spring fungi surveys in the Upper Wolf and Coyote watersheds, and fall fungi in Upper Wolf) would continue to be protected. Buffers would provide protection to known plant populations and no effects are anticipated to known populations of Special Status, or Survey and Manage, plants.

Underburning of *Camassia howellii* and *Silene hookeri* var. *bolanderi* sites can occur on an experimental basis, with monitoring to occur afterwards. Spring burning should not occur, to avoid burning green shoots, while fall burning should only be done after the lower layers of the duff layer are wet, to avoid killing the dormant underground portions (bulbs and caudices). These species should resprout from bulbs or caudices after underburning and therefore no effects are anticipated. The reduction of brush and small tree cover would benefit these species by reducing the shading and competition.

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. Some sites of the newly listed Special Status species might be affected from the action Alternatives, but any possible losses should be minimal and would not contribute to listing under the ESA. For the Special Status species that are Bureau Tracking, surveys and mitigation measures are discretionary (BLM Manual 6840).

Alternative 2

For Survey and Manage Species, buffers would occur around Strategy 1 and Protection Buffer species as provided in the Standards and Guidelines of the Northwest Forest Plan. No effects are anticipated to Special Status, or Survey and Manage plants. There may be a long term negative effect for old growth associated species due to harvesting late-successional interior forest habitat adjacent to the sites and buffers. The fuels treatments may have a long term beneficial effect in that the risk of catastrophic wildfire to late-successional habitat may be lessened.

Alternative 3

Effects are the same as Alternative 1, except that the possible long term negative effect for late successional Survey and Manage species would be reduced. Commercial thinning treatments would retain more late-successional habitat characteristics than regeneration and overstory removal.

Alternative 4: No Action

Under the No Action Alternative, no effects would occur to Special Status, Threatened or Endangered, or Survey and Manage vascular plants, lichens, bryophytes or fungi.

3.4.3 Cumulative Effects on Botany

There may be a long term negative effect for old growth associated species due to harvesting of late-successional interior forest habitat adjacent to the sites and buffers being protected. The fuels treatments are considered to have a long term beneficial effect by reducing the risk of catastrophic wildfire to late-successional habitat.

3.5 Timber and Late-Successional Habitat

3.5.1 Affected Environment (Timber and Late-Successional Habitat)

The project area encompasses portions of 6 seventh field watersheds. All of the sections in this Planning Area are within the Northern General Forest Management Area (North GFMA) land allocation as designated in the Medford District Resource Management Plan (1995). The project area includes 5 plant association groups, with the primary groups being the Douglas-fir-Oak-Poisonoak, and the Tanoak-Douglas-fir-dry groups. There are minor representations of the Douglas-fir-shrub, the Jeffrey pine-grass, and the Douglas-fir-mafic plant groups. The Grave Creek Watershed Analysis (1999) describes 58% of BLM-owned forest lands in the Grave Creek fifth field watershed as being over 80 years old with approximately 39% of the BLM-owned forest land having viable late-successional habitat.

Areas designated for proposed regeneration harvest (RH) or overstory removal (OR) are generally late-successional conifer stands, with minor components of hardwood tree species. Stands range in age from 130 to 200 years with canopy closures from 40% to 80%. Douglas-fir is generally the dominant tree species though ponderosa pine is dominant on serpentine soils and low elevation southern aspects. In RH areas, understories and mid-canopy are composed primarily of hardwoods with lesser amounts of conifer saplings and seedlings. The OR areas are similar, except that the primary component in the understories are conifer seedlings and saplings with minor amounts of hardwoods. Proposed commercial thinning (CT) units range from 70% to 95% canopy closure and 70 to 100 years old. The understory includes scattered hardwoods and suppressed conifer saplings.

Coarse Woody Material (CWM)

There are 2 major plant association groups (PAGs) in the Planning Area.. Tables 11 and 13 are from “Guidelines for Snag and Down Wood Prescriptions in Southwestern Oregon” (White), approved for implementation through the Southwest Oregon Provincial Interagency Executive Committee. The actual existing amounts of coarse woody material found in proposed RH and OR units are displayed in tables 12 and 14. The existing coarse woody material was surveyed under different categories than the Guidelines. However, the amounts of coarse woody material for decay classes 3 through 5 are generally within those ranges suggested by the Guidelines. The amounts for class 2 are acceptable for the Douglas-fir - Oak - Poisonoak group but below for the Tanoak - Douglas-fir - Dry group. The amounts of coarse woody material for decay class 1 appear to be below guidelines for both PAGS.

Table 11. Guidelines for Snag and Down Wood Prescriptions in Southwestern Oregon.

Guidelines for CWM Tanoak - Douglas-fir - Dry Plant Group (PAG)				
Decay Class	6"-9" diam, # pcs. mean, std. dev.	10"-19" d, # pcs. mean, std. dev	20+" diam, # pcs. mean, std. dev	length per piece mean, std. dev.
1	1 (2)	1 (4)	1 (2)	39 (24)
2	1 (6)	1 (5)	1 (6)	40 (30)
3	15 (28)	4 (12)	6 (32)	26 (23)
4	14 (42)	8 (15)	4 (14)	27 (22)
5	4 (19)	8 (20)	3 (11)	20 (16)

Table 12. Existing Coarse Woody Material in Wolf Tree Planning Area.

Wolf Tree Project Area CWM Tanoak - Douglas-fir - Dry Plant Group (PAG) Units 4-2, 9-2, 9-3, 14-5, 15-1, 15-2				
Decay Class	8'-15' lgth, # pcs. mean, std. dev.	Total length in ft. mean, std. dev	16' + lgth, # pcs. mean, std. dev	Total length in feet mean, std. dev.
1	0 (0)	0 (0)	0 (0)	0 (0)
2	0 (0)	0 (0)	.6 (NA)	28.5 (NA)
3	6.3 (.4)	85.5 (5.8)	20.9 (4.8)	570.2 (132.3)
4	18.1 (3.5)	199.6 (38.9)	10.7 (1.5)	256.6 (36.9)
5	2.0 (NA)	28.5 (NA)	2.6 (.2)	57.0 (3.7)

Table 13. Guidelines for Snag and Down Wood Prescriptions in Southwestern Oregon.

Guidelines for CWM Douglas-fir - Oak - Poisonoak Plant Group (PAG)				
Decay Class	6"-9" diam, # pcs. mean, std. dev.	10"-19" d, # pcs. mean, std. dev	20"+ diam, # pcs. mean, std. dev	length per piece mean, std. dev.
1	1 (2)	2 (7)	1 (7)	48 (41)
2	2 (6)	0 (0)	1 (1)	37 (28)
3	13 (31)	5 (17)	1 (1)	27 (22)
4	13 (21)	8 (24)	1 (2)	25 (15)
5	15 (59)	20 (46)	1 (2)	17 (16)

Table 14. Existing Coarse Woody Material in Wolf Tree Planning Area.

Wolf Tree Project Area C W D Douglas-fir - Oak - Poisonoak Plant Group (PAG) Units 3-1a,b,c, 4-3, 6-1, 6-2, 10-5, 28-5				
Decay Class	8'-15' lgth, # pcs. mean, std. dev.	Total length in ft. mean, std. dev	16' + lgth, # pcs. mean, std. dev	Total length in ft. mean, std. dev.
1	0 (0)	0 (0)	0 (0)	0 (0)
2	1.2 (NA)	12.2 (NA)	5.7 (.6)	171.1 (19.3)
3	24.2 (3.8)	268.8 (42.3)	24.1 (4.3)	635.4 (114.1)
4	12.5 (1.3)	134.4 (13.9)	9.5 (1.3)	232.2 (31.9)
5	1.9 (.1)	24.4 (.7)	2.0 (.1)	48.9 (3.2)

3.5.2 Direct Effects on Timber and Late-Successional Habitat

The Grave Creek fifth-field watershed has a total of 104,057 acres with approximately 50,215 acres federally managed. Approximately 63% (31,737 acres) of these federal lands are late successional habitat. Less than one percent of the acreage would be impacted under any of the action Alternatives. The 63% level is well above the Medford RMP direction of retaining at least 15 percent late successional forest patches in fifth field watersheds.

Alternative 1

Approximately 406 acres would be harvested (Table 1) and would include 76 acres of regeneration harvest (RH), 61 acres of overstory removal (OR), and 269 acres of commercial thinning (CT). The areas planned for RH and OR would reduce the amount of late successional habitat (over 80 years in age) on BLM managed land by 137 acres. In the Upper Wolf sub-watershed, 61% of the acres is late successional habitat (3,381 of the 5,547 acres). This would be reduced by 100 acres, or a reduction of 2% to 59%. In the Coyote sub-watershed, 64% is late successional habitat (3,256 of the 5,095 acres). This would be reduced by 37 acres, or a reduction of 1% to 63% late successional habitat.

The conifer reproduction under OR and RH units is about 40 years old and would be released and managed after the overstory is removed. The areas without conifer understory, in particular the RH units, would be planted to conifers. The CT units are expected to reduce canopy closure to an average of 50%. This treatment would increase residual tree diameter growth, allow longer retention and growth of lower limbs for wildlife habitat and reduce the risk of catastrophic fire.

Alternative 2

The effects would be similar to Alternative 1 but with 40 more acres remaining in late successional condition. Approximately 381 would be harvested (Table 1) and include 48 acres of regeneration harvest, 77 acres of overstory removal and 256 acres of commercial thinning. The areas planned for RH and OR would reduce the amount of late successional habitat by 106 acres

Alternative 3

This Alternative is similar to Alternative 1 but would not harvest RH and OR units. Generally, most of the overstories in these stands are understocked and understory conifers would not be released. The effects would be the same as Alternative 1 on the CT units. Late successional habitat would not be impacted.

Alternative 4 (No Action)

There would be no harvest under this Alternative. Individual tree growth rates would continue to decrease in young stands and mortality of suppressed, overtopped trees is expected to increase. There would be a short term increase in small diameter (< 10" diameter) down coarse woody material. However decreased growth rates would increase the time needed for recruitment of large woody material. Conifer reproduction would not be released from overstory removal as in Alternatives 1 and 2. Also, overly dense stands of

young conifers and hardwoods would not be treated for fire hazard reduction.

Coarse Woody Material The recommendations for achieving adequate levels of coarse woody material include leaving an extra overstory tree per acre, for all regeneration harvest and overstory removal units. On average, this would leave an extra 170 feet per acre of coarse woody material in decay classes 1 or 2, which would be in line with the intent of the PIEC guidelines for coarse woody material in both of the PAGs for this Planning Area.

3.5.3 Cumulative Effects on Timber and Late-Successional Habitat

Late-successional connectivity across this landscape is scattered and has been greatly reduced by previous timber harvesting on both public and private lands. Though most of the larger blocks of land are federally managed, late-successional habitat connectivity most times occurs at the corners of alternating federal land sections. The landscape would continue to be fragmented from future timber harvest on Matrix lands.

As timber harvest continues in the Grave Creek watershed, late-successional habitat would be reduced to Riparian Reserves, connectivity blocks, scattered owl core areas, and Timber Productivity and Capability Classification (TPCC) withdrawn areas. There are currently 15,700 acres of late-successional habitat within these established reserves and areas (Grave Creek WA, 1999) and represent 31 % of the federal forest land.

The Serpents Grave, and Poor Angoras Folly timber sales, would remove or modify up to approximately 500 acres of late-successional habitat. Within the next ten years, approximately 1,166 acres on federal ownership in the 70-80 year old age class would be entering the late-successional habitat class and would likely be harvested.

3.6. Wildlife and Late Successional Habitat

3.6.1 Affected Environment (Wildlife and Late Successional Habitat)

Late Successional Habitat

Suitable spotted owl nesting habitat is one indicator of habitat valuable to late-successional associated species. Suitable habitat includes stands that are at least 21 inches diameter breast height (DBH) with a conifer canopy closure of 60 percent or greater. In comparison to suitable habitat, critical habitat are specific areas with features essential to the conservation of the northern spotted owl which may require special management considerations or protection. All proposed units, except those located in Sections 30 and 32 are in designated Critical Habitat for the northern spotted owl.

Table 15. Amounts of Suitable Spotted Owl Habitat Associated with Each Known Historic

Pair of spotted owls. Acres Shown also Represent Critical Habitat, Except as Noted.

Known pair	Suitable and critical habitat within 1.3 miles of the designated center of activity (acres)
Swampford #0924	951
Goat Farmer #1731	952
Levens Gulch #0928	1,094
Bummer #1732A	1,027
Lucky Strike #2068	883
Board Tree East #0878A	1,385
Board Tree West #0878A	1,683
Foley Glen #0917B	1,573 (Not critical habitat.)
Colby #2618	815
Swamp Gas #0950A	560

Snags, Large Down Wood and Duff Sixty-one species of wildlife are associated with large snags, 24 with down wood and 14 with litter and duff. These decaying pieces of wood form many habitat structures for vital processes such as reproduction, hibernation, feeding, resting, sunning, drumming, preening, dusting, lookout and travel. In addition, wood accumulations on streambanks provide habitat for small mammals and birds that feed on stream biota (Johnson and O’Neil 2001). Large down wood can provide much structural diversity in both terrestrial and aquatic environments.

The productivity benefits of these resources include nutrient recycling, nitrogen fixing at decaying wood sites, moisture retention at dry sites, temperature stabilization and prevention of surface erosion (ibid). A stand’s productivity determines, in part, not only to its ability to grow commercially valuable trees, but also to its carrying capacity for those wildlife species dependent on forest resources.

Special Status Species

_____ **Molluscs**

The two taildropper slugs (*Prophysaon dubium* and *P. coeruleum*, the papillose and blue-gray taildroppers) are associated with conifer stands, although *P. dubium* is more often associated with stands having a strong hardwood component. Both are also associated with down logs, litter and fungi. The Oregon shoulderband (*Helminthoglypta hertleinii*) snail is

associated with rocky substrates and deciduous trees. The Oregon shoulderband snail has been found in 3 locations in the project area. In one location, near unit 27-4, the site is on the southwestern edge of the unit. In this case, even though the species appears not to be dependent on late successional forest habitat *per se*, the integrity of the microclimate probably depends on the existing stand to some degree.

Western Pond Turtle

Western pond turtles are found in the Planning Area and they are Bureau Sensitive in Oregon. Oregon Department of Fish and Wildlife lists them as “Critical” (species for which listing as [state] threatened or endangered is pending) and the Oregon Natural Heritage Program lists them as a taxon that is threatened with extirpation. These reptiles inhabit ponds in the forested matrix and slow-moving portions of Wolf and Coyote Creeks. They’re potentially affected, because they overwinter in the duff layer on west and south aspects near slow water.

Spotted Owl

The extent of suitable spotted owl habitat is described above. Spotted owls are a federally Threatened Species and they require large (>21 inches dbh) trees in fairly decadent, closed-canopy stands for good nesting habitat.

Great Gray Owl

A protection buffer species in the Northwest Forest Plan, this owl nests in late successional trees and forages in meadows and agricultural fields. The Planning Area has a limited amount of great gray owl habitat and was surveyed to protocol in 2000 and 2001. No great gray owls were discovered in the process.

Goshawk

Goshawks likely nest in the Planning Area, but the current nest location is unknown. Goshawks generally nest in the largest, oldest tree stands in any given area, but goshawk foraging occurs over a variety of stand age classes. The Planning Area was surveyed for goshawks in 2000 and 2001 would continue. This large predator apparently needs to choose larger prey items (e.g., grouse, tree squirrels) from several different habitat types, and thus needs to forage over several different seral types.

Red Tree Vole

A Survey-and-Manage species, red tree voles are arboreal rodents with very low dispersal

and reproductive capabilities. Concerns are for maintaining the species potential for reproduction, dispersal and genetic exchange.

3.6.2 Direct Effects

Direct Effects on Late Successional Habitat.

The minimum amount of spotted owl habitat that is required for a site to be viable is 60 per cent of the home range. The accepted home range radius for the Klamath Province is 1.3 miles and the minimum amount for a site to be considered viable (60 per cent) is 2,038 acres. All the sites affected by the Wolf Tree project are considered below the level for minimum viability.

Table 16. Remaining Suitable Spotted Owl Habitat Under Each Alternative.

Area Within 1.3 mi. of known pair	Alternative 1	Alternative 2	Alternative 3	No Action
Swampford #0924	926	926	951 with 25 downgraded	951
Goat Farmer #1731	927	927	952 with 25 downgraded	952
Levens Gulch #0928	1,010	1,006	1,080 with 68 downgraded	1,094
Bummer #1732A	979 with 31 downgraded	980 with 31 downgraded	1,013 with 65 downgraded	1,027
Lucky Strike #2068	832 with 37 downgraded	835 with 37 downgraded	873 with 72 downgraded	883
Board Tree East #0878A	1,362 with 4 downgraded	1,365 with none downgraded	1,373 with 13 downgraded	1,385
Board Tree West #0878A	1,680	1,680	1,683 with 3 downgraded	1,683
Foley Glen #0917B	1,573 with 10 downgraded.No acres are critical habitat.	Same as Alt. 1	Same as Alt. 1	1,573
Colby #2618	815 with 7 downgraded	815 with 3 downgraded	815 with 7 downgraded	815

Swamp Gas #0950A	555	555	560 with 5 downgraded	560
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Alternatives 1 and 2 would adversely affect spotted owls and other late-successional species through habitat loss from regeneration and overstory removal cuts. Critical habitat comprises most of the area affected in all action Alternatives: 394 out of 413 acres in Alternative 1, 375 of 388 acres in Alternative 2 and 366 out of 376 acres in Alternative 3. Canopy closure, tree size and stand complexity would be reduced dramatically within overstory removal or regeneration cuts. This change to spotted owl nesting habitat is considered “removal,” and a reduction to spotted owl habitat. With commercial thinning, features of late successional stands would be somewhat downgraded: some of the decadent and large trees would be removed or felled, stand complexity would decrease, canopy closure would average less than 60 percent (usually approximately 50 percent). Most of the commercial thin units within late successional stands would have their habitat “downgraded,” or reduced from nesting habitat to roosting/foraging habitat (Table 16). One exception to this “lighter touch” type of cutting is the commercial thinning in unit 9-4, in which the resulting canopy closure would result in less than 40%. This habitat is, therefore, considered “removed.”

Alternative 3 would maintain at least 40% canopy closure after harvest. In addition, there are merchantable-sized trees that are interspersed throughout the units. The quality of spotted owl habitat would not be diminished because dispersal habitat would not be affected. This light type of harvest would not affect the larger structures that comprise prime spotted owl habitat or the habitat of most other late successional associates.

The No Action Alternative would cause very little change in the ability of the Planning Area to support spotted owls and other late successional species in the short run. Because Alternative 3 would eventually improve the complexity of structure of many stands, in a few decades the benefits of this Alternative would outweigh those of Alternative 4. In the long run, the stands resulting from Alternative 3 would provide better late successional habitat than the stands resulting from the No Action Alternative.

Alternative 1 would remove approximately 137 acres of critical habitat, and Alternative 2, approximately 127 acres. Evaluation of the overall impact to the species would have to be done on at least a province-wide basis, which would be accomplished in the Biological Opinion for the BLM and Forest Service’s timber harvest in the province. At this time a Biological Opinion has not been issued.

This Critical Habitat Unit (OR-32) was originally created to provide continuity for dispersing owls between the Galesville and Middle Rogue Late Successional Reserves (LSRs), later identified in the Northwest Forest Plan. Such continuity is also augmented by Riparian Reserves, 100-acre LSRs, green tree retention, red tree vole reserves, and stands fragmented by land use allocations and buffers and not economical to harvest. Although the action Alternatives would remove and

degrade spotted owl habitat; the extent to which this would occur is greatly reduced from the potential amount originally envisioned in the Northwest Forest Plan and Medford District RMP.

Direct Effects to Snags, Large Down Wood and Duff. It is expected that large snags would be incidentally knocked down and felled if a safety hazard during logging operations in Alternatives 1 and 2. While they would be left on the ground as large wood, the timing and progression of their decay would be different than if left to die as a standing tree. Fallen trees would decompose faster than standing and available habitat for above-ground cavity nesters would be shortened. Smooth cut surfaces produced by chainsaws would not produce the complex arthropod and small vertebrate habitat that natural fallen trees provide.

Direct Effects on Special Status Species

Direct Effects to Molluscs

The two Survey and Manage molluscs (taidroppers *Prophysaon ceruleum* and *P. dubium*) are no longer on the Survey and Manage protection list and would be protected in Alternative 2 but not Alternative 1. There might be a slight decline in their numbers after timber harvest through change in their microclimate in the short term. Alternatives 1 and 3 would have an impact because they are found in a range of seral stages. However, these two Alternatives would not permanently affect the long-term potential for their persistence in the Planning Area. The Oregon shoulderband snail (*Helminthoglypta hertleini*), would have its microclimate buffered in Alternatives 1 and 2. There should be no direct or indirect effects to this species.

Direct Effects to the Western Pond Turtle

There should be few direct effects to western pond turtles. The only direct effect to the turtle would be direct mortality of animals crossing roads to nest or hibernate and the increased traffic that would come with timber sale operations.

Direct Effects to the Northern Spotted Owl

Spotted owl populations have been in decline in recent years, as expected and described in the FSEIS for the Northwest Forest Plan (USDA Forest Service 1994). While traditionally thought to represent the minimum level at which a spotted owl pair's home range is viable, the 60 per cent figure is not necessarily meaningful. "...Such thresholds will be impossible to predict with accuracy because they are moving targets that change over time and location with a changing environment" (Lamberson et al. 1992 in SAT Report 1993, p. 186). The same report also goes on to observe that at this point in the spotted owl's predicted decline, it's impossible to distinguish a collapsing population from one that eventually reaches a stable equilibrium at a lower level.

While it's impossible to exactly characterize the effect to spotted owls and their critical habitat at times and places other than in the immediate vicinity and time frame of cutting these units, Alternatives 1 and 2 would reduce the ability of dispersing or migrating spotted owls or other species associated with late successional habitat to successfully move, and find food and mates. Alternative 3 would not reduce this ability, as all stands would maintain a canopy closure of at least 40 per cent.

In conclusion, the direct effects of Alternatives 1 and 2 could contribute to the continued decline of spotted owls and other species dependent on late successional conditions within the Planning Area.

Direct and Indirect Effects to Great Gray Owls and Goshawks

At this time there are no known great grays or goshawks nesting in the Planning Area although goshawks have been observed in previous nesting seasons. It is likely that over the long term Alternatives 1 and 2 would reduce the ability of these species to colonize (nest in) the area, as they both require large trees in which to nest. Considering the effects to potential immigrants, these actions would reduce the potential for the Planning Area to serve as an alternate nesting area in the event that adjacent areas became unsuitable. Alternative 3 would probably benefit both of these raptors, as it would accelerate the growth of large trees, reduce the amounts of small structure (brush) in the stands and meadows, and reduce the risk of the loss of large trees to fire, insects, disease and other pathogens. This would likely be both directly beneficial in the short run and also indirectly beneficial in the long run.

Direct Effects to the Red Tree Vole

There would be some adverse affects to the red tree vole through loss of habitat as trees adjacent to its reserves would be removed. In Alternatives 1 and 2, this loss would be short- and long-term. In Alternative 3 the loss would be short term. With the increased robustness of the remaining trees in Alternative 3, this action might be adverse in the short term, but beneficial in the long term. Effects are within the Management Recommendations for the Red Tree Vole provided by the red tree vole interagency management team

3.6.3 Indirect Effects

Indirect Effects to Late Successional Habitat.

Alternative 3 would accelerate the growth of residual trees and produce a varied stand structure. Under the No Action Alternative, these trees would continue to grow in a closed canopy and lose lower branches from this stem exclusion stage of development. In Alternative 3 residual tree

branches would be allowed to develop laterally, resulting in a more complex stand. This complexity produces much greater varieties and quantities of arboreal niches, benefitting not only owls, other birds and red tree voles, but also arboreal lichens and the many insects that live in such microsites. Such a stand can support greater numbers and diversity of insectivorous birds and mammals. In addition, many omnivorous birds and mammals depend on soft and highly nutritious insect larvae to feed their broods each spring. Thus, a richer invertebrate community would probably improve the reproductive success of such vertebrates. In turn, a more complex small vertebrate community can support a healthier component of predators, such as fisher, goshawk, spotted owl and red tailed hawk.

These stands are in General Forest Management Area lands, and may be cut before they reach the level of size and decadence considered optimal for nesting spotted owls, red tree voles and other late successional species. So the effects on wildlife and plants would be postponed, but not eliminated.

Indirect effects to snags, large down wood and duff. The greatest effect Alternatives 1 and 2 would have is the loss of potential recruitment of large snags. RH and OR remove most of the large trees and would manage future stands on a 100 year harvest rotation. Large trees (generally trees over 30" dbh) would become rare, compared to historical amounts. The ability of trees to protect each other in strong winds would be compromised, and increased blow-down of residual trees would accelerate the toppling of remaining snags.

Indirect Effects to Special Status Species

Indirect Effects to Molluscs

Because down wood and duff contribute to the habitat quality for the two slugs, the reduced potential for down wood, as described above, may affect the area's carrying capacity for molluscs. However, the species should still persist in good numbers in the Planning Area.

Indirect Effects to the Western Pond Turtle

There should be no indirect effects to this species from any action Alternative.

Indirect Effects to the Red Tree Vole

The red tree vole is known for its inability to colonize and spread across non-habitat areas. Thus, an indirect effect of Alternatives 1 and 2 would also occur in any adjacent areas that depend on the project area for connectivity, colonization or the level of populations that prevent inbreeding and other factors dependent on a species being widespread.

3.6.4 Cumulative Effects to Habitat and Species

Connectivity and habitat quality across this landscape is considered very poor as it has been greatly reduced by previous and current timber harvesting on both public and private lands. The landscape would continue to be fragmented and late-successional habitat reduced as timber harvest continues in the future on these Matrix lands.

The patchy distribution and low dispersal capability of species such as red tree voles (Huff et al. 1992) and molluscs within forest habitats leave these low-mobility species vulnerable to cumulative effects of timber harvest within a watershed. Spotted owls are susceptible simply because the amount of habitat they need for viability of a single pair (thousands of acres) is so great. The cumulative effects of timber harvest on public and private lands within the Wolf Creek sub-watershed may aggravate a trend to locally extirpated populations or continued species reduction within the sub-watershed. Because of the time frames needed for suitable habitat conditions to recover, combined with the low dispersal capability of these species, their persistence within this watershed would be negatively affected for at least several decades.

3.7 Fuels

3.7.1 Affected Environment (Fuels)

Fuel hazards were analyzed based on fuel models of different vegetation types. The highest hazard was related to brushy, light fuels and ladder fuels.

There were several aspects of high fire risk, including: ridge tops, where the probability of lightning strikes are highest, the major access roads which receive the most vehicle use, and the area with private residences.

The following areas were considered high value:

- spotted owl core areas,
- the LSR,
- private residences,
- high use travel routes,
- recreation use (Burma Pond),
- wetlands(Golden Coyote).

The potential for stand-replacing fires in this area has increased due to fire suppression activities that began around the turn of the century. Fire suppression has allowed an increase in dense vegetation in young and mature forest stands. Historic lightning fire data within this area indicate that fires ranged from less than an acre to more than 2,000 acres (e.g. Grave Creek Fire). The density of this vegetation has created ladder fuels, which have the potential to carry fire into forest canopies, increasing the risk of severe fire behavior. These types of fires make wild land fire suppression efforts difficult.

Three factors were used to analyze fire management decisions: hazard, risk, and value.

Fuel hazard - the capability of fuels to carry a fire

Fire risk - the probability of ignition

Value - the relative potential for resource loss from a fire.

These factors are used to evaluate and set priorities for treatments while giving consideration to other management opportunities, such as wildlife habitat enhancement. The Planning Area is composed of BLM and non-federal lands. These lands are generally considered “high hazard and high risk” because of the presence of potential ignition sources and the light flashy fuels. Many of these pieces of private land have been logged without subsequent slash reduction treatment.

Areas where all three factors were rated as high are highest priority for fuels treatment.

These include areas that received recent pre-commercial thinning (PCT) or brushing adjacent to well traveled roads, owl core areas, Critical Habitat Units (CHU) and within the Late-Successional Reserve (LSR) bordering non-federal lands. There are a few instances where all three rating factors are “high” in the Planning Area.

The second priority for fuels treatment include areas where high risk and high value overlap. These areas are around spotted owl core areas, Critical Habitat Units(CHU), lands adjacent to highly traveled roads, and heavily used recreation areas such as Burma Pond. These areas are similar to the highest priority areas but there is a lack of recent PCT, brushing, or other management activities that create heavy slash loading.

The third priority for fuels treatment is where PCT, brushing, and other management activities are not adjacent to well-traveled roads, near owl core areas or CHUs. This priority level may also

include recreation use areas. The areas that have received PCT treatments exhibit a higher short-term hazard than un-thinned stands of similar size and age. Generally, different stands are pre-commercially thinned each year creating new areas of high priority for hazard reduction treatments. PCT stands would fall from high priority for treatment as slash breaks down and decomposes, generally after the first three years.

3.7.2 Direct Effects on Fuels

Alternatives (1,2,3)

Alternatives 1, 2 and 3 would reduce the vertical fuel ladders and overstocked conditions in upper elevations of the watershed, where risk of catastrophic fire is especially high due to lightning strikes, and would reduce the risk of loss of valuable resources on both federal and private lands. The fuel treatments would have potential adverse impacts to some animal species with low mobility such as salamanders and invertebrates. In the short term, logging would create higher fuel loadings on the ground compared to the No Action Alternative. Fuel amounts are measured in tons per acre for different size material. Material up to 3 inches in diameter has the greatest influence on the rate of spread and flame length of a fire and, therefore, fire suppression efforts. Prior to fuels treatments, fuel loadings after thinning would be increased by approximately 10-15 tons per acre. These conditions would allow a higher rate of spread and greater flame lengths. Prior to fuels treatments on regeneration harvest units, fuel loadings would increase 20-35 tons per acre. These units would exhibit higher rates of spread and flame lengths than the thinning units.

Conversely, removal of smaller trees would reduce ladder fuels in harvested stands. The potential for a large fire occurring is reduced as stand density is reduced. Reducing canopy cover to 60 percent would reduce (but not completely eliminate) the potential for running crown fires. The ladder fuel induced crown fire potential would also be reduced. In stands identified for regeneration harvest, the reduction of heavy ground fuels through site preparation treatments would reduce fire hazard. Timber harvest would break up the vegetation and create a mosaic of age and size classes across the landscape. A mosaic of stand types would prevent fires from burning entire drainages since this condition would slow the spread of fire and allow direct attack by hand crews (flame lengths must be less than 4 feet to allow direct attack).

Table 17 displays the associated changes in fire behavior due to a reduction in the dead, down woody material after the fuels have been treated. Fire behavior on south slopes and ridge tops would increase due to a change in the fuels. Harvest and fuels treatments would open the canopy and encourage the growth of grasses and forbs. These light, flashy fuels allow fires to burn faster than down, woody material. Although wildfire spread rates may increase, fire intensity would be lower and less likely to result in a catastrophic fire.

Treatments on dry, low-elevation sites and south-facing aspects, such as canyon live oak, and ponderosa pine, would reduce the existing high fuel hazard conditions and the risk of high fire intensities.

Establishing defensible space along strategic ridge lines and main travel routes would meet several objectives. Crown fires would be less likely to start within these zones. Crown fires which originate outside of and burn into these zones would be less likely to continue to burn in the crowns, due to the wider spaced canopies within the defensible space. These areas also would provide a greater opportunity to stop the spread of a wildfire and keep it from burning the entire planning area.

Defensible space areas would also provide an area which would be safer than what currently exists for wildfire suppression efforts. The defensible space would allow for rapid deployment of personnel and equipment which would help in reducing the size of wildfires. These areas could also be used as control lines for future treatments of high risk and high hazard areas, which would further reduce the fuel hazard of the Planning Area. The short-term impact of developing these defensible space areas would be the requirement to keep them clear of ingrowth every 5 to 10 years.

Table 17. Expected Changes in Fire Behavior Following Fuels Treatment by Alternative.

	Alternative 1		Alternative 2		Alternative 3		Alternative 4 (No-Action)	
	ROS	FL	ROS	FL	ROS	FL	ROS	FL
Plantations	6	2	6	2	6	2	85	10
Dry South Slopes and Ridge tops	87	10	87	10	87	10	371	42
Moist North Slopes	6	2	6	2	6	2	19	8

ROS = Rate of Spread (ft/min) FL = Flame Length (ft)

Typically, flame lengths of 2-4 feet are expected in underburn units. Broadcast burn units would exhibit more intense fire behavior, with 4-6 foot flame lengths, due to the high fuel loading in these units. The majority of fuel created and consumed by the proposed action would be 3 inches and less in diameter. These fuels typically burn out relatively fast with little heat transfer to soils with rapid burn out. This may result in less scorch and mortality to the residual stand in underburn units. Some mortality is expected in the smaller diameter size classes as a result of the burn, however, the hazard to the remainder of the stand would be reduced.

Alternative 4 (No Action)

Under Alternative 4 no fuels treatments are proposed, and the BLM and non-federal lands would be at increased risk of loss from catastrophic fire with continued and increased fuel loading.

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 or adjacent to the 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 Alternative 4.

Because stand densities would remain unchanged, the trend to shade tolerant species would continue which would create a moderate increase in ladder fuels. As mortality continues in these stands, snag populations and down, woody fuels would continue to accumulate. Until a disturbance, such as fire, enters the stand, this trend is unlikely to change. If a fire were to occur, rate of spread and flame length would be severe enough to prevent direct attack by hand crews. A wildfire would have the potential to cause a considerable amount of scorch and mortality of individual trees. The potential for a large fire to occur increases as the vegetation increases in density and becomes more continuous and homogeneous.

Existing high hazard conditions would continue in brush fields, areas with light, flashy fuels (south-facing slopes), and overstocked stands with ladder fuels. Continued fire suppression activities would allow pole-sized Douglas-fir and hardwoods to grow underneath large, overstory conifers, creating very dense stands that are prone to stand-replacing fires under extreme weather conditions. Flame lengths are higher and rates of spread are higher in this Alternative due to a build up of down, woody fuels. Plantations are the exception because the canopy would remain closed and would not permit grasses to grow. The only fuel that would be on the ground to burn would be small twigs and needles from the overstory.

As the vegetation along roads grows due to the lack of maintenance, access for firefighting crews would decrease. A decrease in road access and a simultaneous increase in ladder fuels would increase the probability of a large, intense wildfire. This could lead to a greater chance of a loss of late successional habitat to wildfire events.

3.7.3 Cumulative Effects on Fuels

Initially, there would be a reduction in the fire hazard for all action Alternatives. However, over a period of 25 to 30 years, the hazard would gradually return to current levels, due, in part, to fire suppression activities. Harvesting and burning the logging slash would also temporarily reduce the

overall potential for crown fires. Pre-commercial thinning treatments that might occur in the future would increase hazard if the slash is not treated. If the slash is treated, thinning would help reduce potential stand-replacing fires. The continued growth of vegetation and the associated fuels accumulation would keep the fire hazard high and maintain the potential for stand-replacing fires. Logging on adjacent private timberlands may increase the potential for fires to spread into the Planning Area if logging slash is not properly treated.

3.8 Air Quality

3.8.1 Affected Environment

Two designated air quality areas (defined by the Oregon Department of Environmental Quality) are far enough away that they would not be affected by management activities within the Planning Area. The Grants Pass non-attainment area is 20 miles south, southwest. The Medford/Ashland non-attainment area is 36 miles southeast of the Planning Area. There are three small communities and Interstate- 5(I-5) in the vicinity of the Planning Area: Wolf Creek (approx.12 miles west), Glendale (approx.12 miles northwest) and Azalea (approx. 8 miles north). These communities are not listed as non-attainment areas.

Air quality and visibility monitoring sites do not exist in the immediate vicinity where treatments would occur, therefore, existing air quality information is not available. However, air quality is considered excellent because there are no stationary sources of particulate matter production and the Planning Area is remotely located.

3.8.2 Direct Effects on Air Quality

Mitigation measures would minimize smoke intrusion to Wolf Creek, Sunny Valley, Glendale and Azalea and I-5 (i.e; wind direction favoring smoke dispersion away from communities and I-5, amount of fuels or units treated in a burn period or time of year units are treated).

Pile burning would occur in the winter and would not produce enough smoke to cause intrusions into any smoke sensitive area. Any of these burns would occur under prescription parameters that would include transport wind directions to carry smoke away from sensitive areas and identified local communities.

When burning under spring-like conditions, larger fuels are not consumed due to higher fuel moistures. Fuel consumption is lower, creating fewer emissions, with smoke dispersal easier to achieve under the general meteorological conditions. Hand piling of slash has allowed selective burning of woody debris during late fall and winter but only under weather conditions that allow optimal smoke dispersion. These mitigation measures can be used to bring emissions below the minimal levels as required in the Clean Air Act.

The Oregon Smoke Management Plan, a part of the required state implementation plan (SIP), identifies strategies for minimizing the impacts of smoke from prescribed burning on the smoke sensitive areas within western Oregon. Particulate matter with a nominal size of 10 microns or less (PM 10) is the specific pollutant addressed in the SIP. PM-10 refers to particles smaller than 10 microns and have the potential for health concerns. Hand piling would produce approximately 560 pounds of emission/acre. Comparatively, a wild land fire through this Planning Area would produce approximately 1,350 pounds of emissions/acre.

3.9 Cultural Resources

3.9.1 Affected Environment (Cultural Resources)

In order to determine where the affected areas of cultural resources are within the Wolf Tree planning area, an archeological survey was completed for the area. The survey puts the Glendale Resource Area in compliance with the State Historic Preservation Office (SHPO) standards.

The methodology of the survey was to complete a prefield historical/prehistorical research based on maps, district records, and books. This prefield research allowed for the field work to be targeted in the areas likely to contain cultural resources. Field work consisted of a 15% sample of the entire project area. This method of survey complies with Section 106 of the National Historic Preservation Act. Sites that are found are recorded by photographing the site and completing a site record form.

The field work took place during the 2000 and 2001. Seven sites were found and recorded. These include: mine sites, adits, collapsed cabins, artifacts, and a mining ditch.

3.9.2 Direct Effects

Project design features are put into place to mitigate impacts to found sites. If the project design features are enforced there would be no significant effect on known cultural resources.

3.10 Noxious Weeds

The noxious weeds Scotch broom and meadow knapweed have both been surveyed within the Planning Area. If the project design features are followed their spread would be kept to a minimum, and there would be no significant effect. Some of the areas for prescribed burns have these noxious weeds growing along them. A hot fire can kill Scotch broom and can help reduce knapweed.

4.0 Monitoring

This timber sale would be subject to the standard monitoring called for in the RMP.

5.0 List of Preparers

Interdisciplinary Team

NAME	TITLE	RESOURCE VALUES ASSIGNED
Larry Pingel *	Forestry Technician - Fuels / Timber	Fire Risk/Hazard, Fuels Treatments, Forest Health
Marylou Schnoes *	Wildlife Biologist	Wildlife, Prime or Unique Lands
Loren Wittenberg *	Soils, Hydrologist	Floodplains, Wetlands, Soils, Water
Douglas Goldenberg *	Botanist	T&E Plants
Robert Bessey	Fisheries Biologist	Fisheries
Randy Bryan*	Engineer	Roads
Diane Parry	Cultural Res. Tech.	Cultural Resources
Doug Stewart *	Silviculturist	Silviculture
Dave Peters*	Forester	Silviculture
Jim Collins	GIS specialist	Geographical Information Systems
Craig Olson	Forester	Logging Systems
Martin Lew*	Nat. Resource Spec.	ID Team Leader

* Project Planning Core Team Member

6. Agencies and Persons Consulted

Agencies Consulted

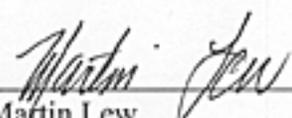
National Marine Fisheries Service (NMFS), United States Fish and Wildlife Service (USFWS)

Public Participation:

The Glendale Resource Area mailed letters to local residents of Sunny Valley and Wolf Creek and placed notices in the "Big News" community newsletter and community bulletin boards inviting residents to attend a public scoping meeting for the Wolf Tree Project. As mentioned in chapter 1, three public meetings were conducted.

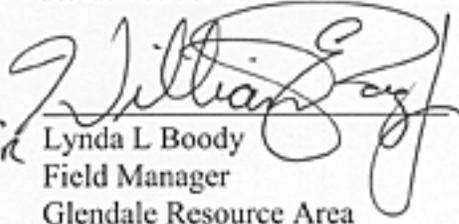
Public Notification

The notification that this environmental assessment is available for review will be published in local newspapers. The EA will be sent to several interested parties who have requested to be on the mailing list for such documents. In addition, several state agencies and local governments will be notified. The EA will be available for review on the Medford District website.



Martin Lew
Natural Resource Specialist
Reviewed for format and consistency

Date 7/17/01

for 

Lynda L. Boody
Field Manager
Glendale Resource Area

Date 7-19-01

Appendix A

Initial Proposal and Reasons for Dropping or Reducing the Size of Units.

Unit	Orig. Ac	Acres	Action	Unit	Orig. Ac	Acres	Action
King Wolf				Coyote Pete			
4-2	17		Drop- RTV	22-7	13		Drop- Rip
10-1	15		Drop- Plants, RTV	28-2	3		Drop- Plants
10-2	24		Drop- Riparian	28-10	3		Drop- Plants
10-6	42		Drop- Plants	30-1b	8		Drop- RTV
10-8	10		Drop- RTV, Rip	30-3	3		Drop- RTV
11-1	24		Drop- Rip, Plants	30-4	6		Drop- RTV
11-3	9		Drop- RTV, Rip	32-1	10		Drop- RTV
14-2	14		Drop- RTV, Rip	27-5	13		Defer (young)
14-4	8		Drop- RTV				
15-1	22		Drop- RTV, Rip	21-3	9	4	RTV
15-2	8		Drop- RTV	22-1	17	8	RTV
13-1	8		Defer- recent CT	22-4a	13	13	CT to NCDM
				22-4b	21	15	Plants
				22-4c	20	20	CT to NCDM
3-1a	81	10	RTV (43ac), Rip	22-4d	53	53	CT to NCDM
3-1b		12	“	22-9	12	7	OR to NCDM
3-1c		15	“	23-4	22	8	RTV
4-3	68	25	RTV (43ac)	27-1	20	14	Plants
6-1	84	70	RTV	27-2	9	6	Plants
6-2	30	20	RTV, Rip	27-3	25	14	RTV, Plants
9-2	31	31	CT to NCDM	27-4	17	16	Plants
9-3	12	12	CT to NCDM	27-6a	20	12	RTV
9-4	63	5	RTV (40ac), plants	27-6b	45	45	CT to NCDM
10-3	23	12	Rip	27-8a	25	8	CT to NCDM

Wolf Tree Project

Unit	Orig. Ac	Acres	Action	Unit	Orig. Ac	Acres	Action
10-4	24	15	Rip, Plants	27-8b		6	Rip
10-5	11	8	Rip	28-1	9	8	Rip
10-7	78	20	RTV, Rip, Plants	28-4	9	8	Rip
11-2	18	10	RTV	28-8	11	10	Plants
14-6	11	5	RTV, Rip	28-9	8	6	Plants
15-3	8	7	RTV	28-11	7	6	RTV
15-4	34	10	RTV, Rip, Plants	30-1c	6	5	Rip
15-5	69	25	Rip, Plants	30-2	8	8	OR to NCDM
23-1	14	5	Plants	30-5	9	7	
23-2	5	3	Plants				
23-3	20	5	RTV, Rip				
7-1	14	14		22-2	10	10	
9-1	25	25		22-5	4	4	
9-5	8	8		22-8	10	10	
14-5	26	26		27-7	7	7	
14-7	22	22		28-5	5	5	
14-8	13	13		28-6	5	5	
5-1	320	320		30-1a	7	7	
9-5	80	80		28-12	30	30	
14-8				22-10	25	25	
	1393			22-11	30	30	
				27-9	50	50	
				20-1	40	40	
					677		

Rip= Riparian Reserves
OR = Overstorey removal

RTV =Red Tree Vole
CT =Commercial Thin
NCDM=Non-Commercial Density Management

Appendix B

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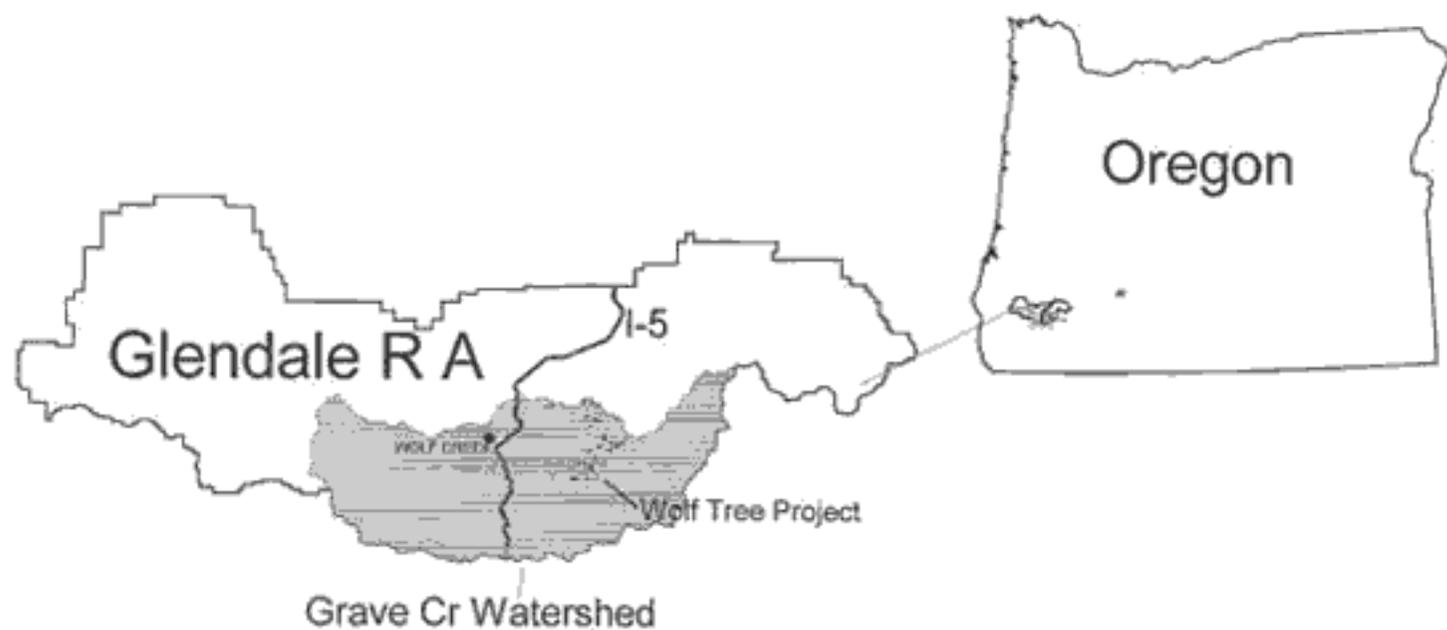
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APPENDIX C

MAPS

Wolf Tree Vicinity Map



Wolf Tree Project

Alternative 1

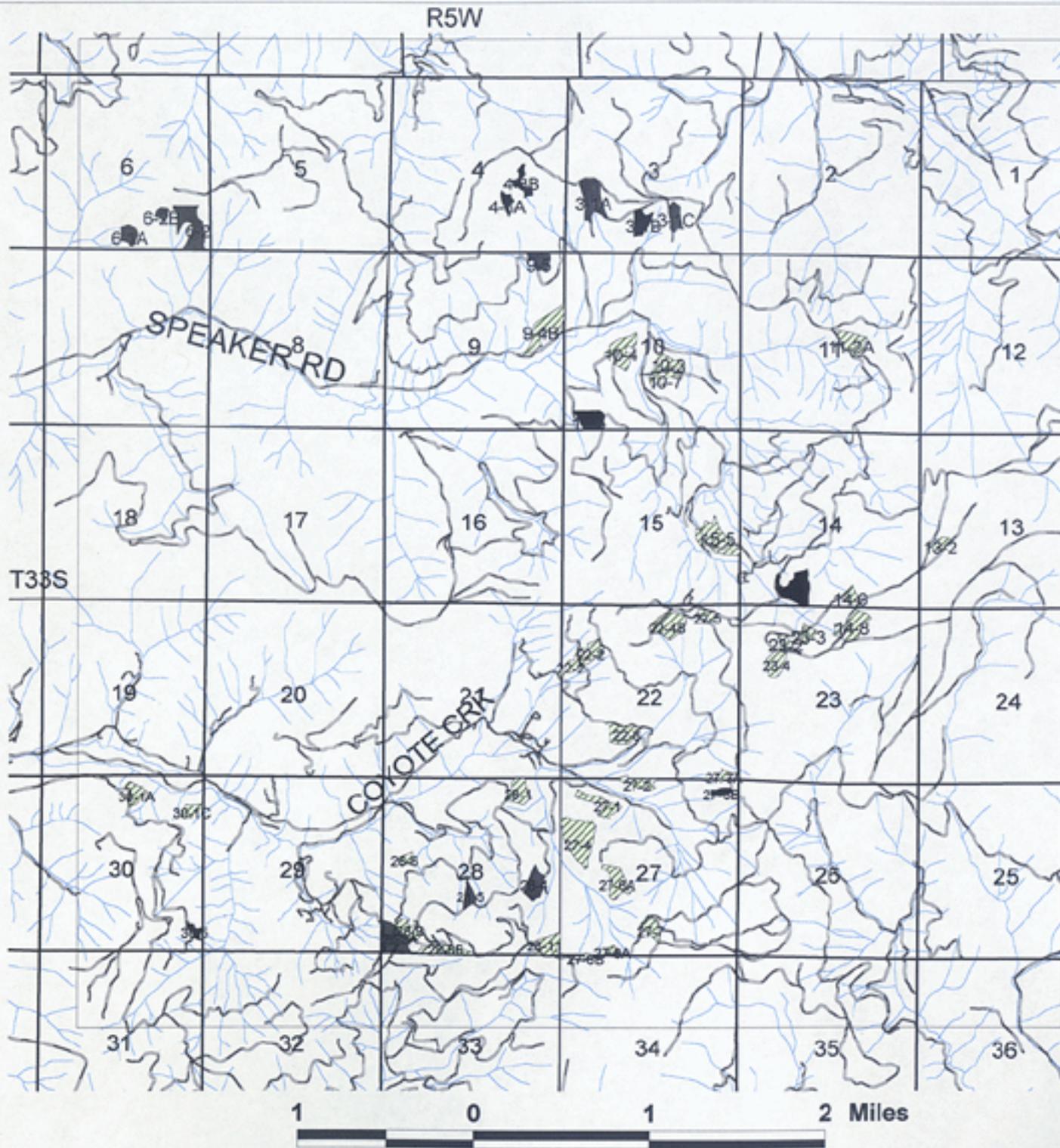
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-  RH
-  GI_sect2000



Wolf Tree Project

Alternative 2

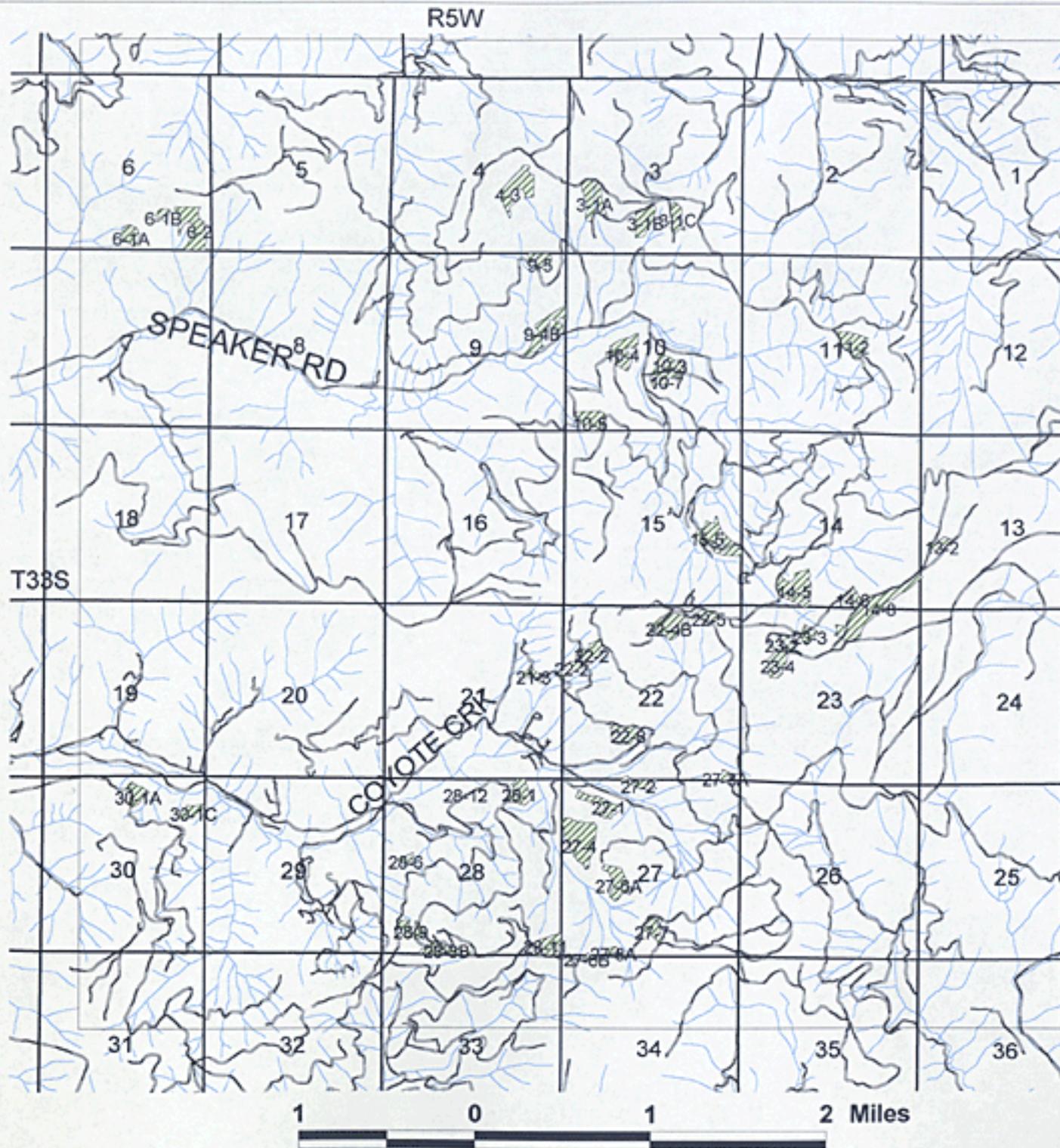
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-  OR/CT
-  RH
-  GI_sect2000



Wolf Tree Project

Alternative 3

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-  CT
-  CT/FHR
-  GI_sect2000



Wolf Tree Project Fuel Treatments

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