APPENDICES

A – Comparison of Gotchen Roads Proposal to Forest Roads Analysis Recommendations

B – Public Scoping Packet

C – Summary of Public Scoping Comments

D – Non-Significant Issues Addressed in the Gotchen Analysis

E – Alternative Details

F – Treatments, Priorities and Methods

G – Summary of Cumulative Activities

H – Special Habitat Features

I – DecAID Analysis

APPENDIX A

APPENDIX A -- COMPARISON TABLE OF GOTCHEN ROAD PROPOSALS TO FOREST ROADS ANALYSIS RECOMMENDATIONS

Road Number	Proposed Treatment	Gifford Pinchot Forest Roads Analysis Recommendations
8000200	Decommission	Closed & Stablilized
8020747	Decommission	Closed & Stabilized
8031017	Closed	Seasonally Open
8031706	Closed	Closed & Stabilized
8031708	Closed	Closed & Stabilized
8040027	Decommission	Closed & Stabilized
8040031	Closed	Open for High Clearance
8040040	Decommission	Closed & Stabilized
8040050	Decommission	Closed & Stabilized
8040101	Decommission	Closed & Stabilized
8040125	Closed	Closed & Stabilized
8040726	Decommission	Closed & Stabilized
8040728	Decommission	Seasonally Open
8040764	Decommission	
8200160	Closed	Open for High Clearance
8200170	Closed	Open for High Clearance
8200190	Closed	Open for High Clearance
8200190	Closed	Seasonally Open
8200191	Closed	Seasonally Open
8200200	Closed	Open for High Clearance
8200220	Closed	Open for High Clearance
8200705	Decommission	Closed & Stabilized
8200727	Closed	Closed & Stabilized
8200731	Closed	Closed & Stabilized
8200736	Decommission	Open for High Clearance
8200737	Closed	Closed & Stabilized
8200740	Decommission	Closed & Stabilized
8200743	Closed	Closed & Stabilized
8200745	Decommission	Closed & Stabilized
8200746	Decommission	Closed & Stabilized
8200748	Decommission	Decommission
8200749	Closed	Closed & Stabilized
8200753	Closed	Closed & Stabilized
8200761	Closed	Open for High Clearance
8200762	Closed	Open for High Clearance
8200763	Closed	Open for High Clearance
8200768	Closed	Decommission
8225071	Closed	Open for High Clearance
8225150	Closed (upper)	Seasonally Open
8225150	Decom (lower)	Open for High Clearance
8225731	Decommission	Decommission

Appendix B – PUBLIC SCOPING DOCUMENT FOR THE PROPOSED ACTION

Cover Letter

Proposed Action Maps

Proposed Action Narrative

Proposed Action Tables

Proposed Action Treatment Details

Gotchen Issues

File Code: 1900

Date: February 19, 2002

Gotchen Risk Reduction Proposed Action

Dear Interested Citizen:

The Mt. Adams Ranger District has drafted a proposed action to address the threat of fire and the risk of losing late-successional function and resiliency with the Gotchen Late Successional Reserve (LSR) and adjacent matrix lands. As part of our public scoping process, we would like your comments on our proposal. From your issues and comments, the interdisciplinary team will look at alternative ways to reduce these risks. The resulting alternatives and analysis will be published in a draft environmental impact statement (DEIS). At this time, we anticipate the release of the DEIS during the summer of 2002. You will again, of course, have the opportunity to comment at that time. Ultimately, as the Deciding Official, I will make a decision on the type, quantity, location, timing and priority of the risk reduction activities to undertake. The notice of Intent (NOI) to prepare and Environmental Impact Statement was published in the Federal Register on November 6, 2001.

An on-going spruce budworm infestation within the Gotchen landscape over the last decade has killed many grand fir trees, resulting in the buildup of fuels. Not only is the landscape at risk from the threat of stand-replacing fires, function and resiliency of the late successional forests within the LSR is also threatened. It's a complex problem with no easy solutions. To provide you with sufficient background we're including several support documents to aide in your understanding of the conditions in the Gotchen landscape and the rationale for the particular actions in this proposal. The following documents are enclosed for your review:

- Purpose and Need for Action
- Maps: Vicinity, Management Areas, Fire Condition, Proposed Action, Proposed Road Closures
- Proposed Action Narrative
- Proposed Action Table/Road Management Proposals
- Proposed Action Treatment Details
- Gotchen Issues

We appreciate your interest in this project and would like to have your written comments on the proposed action by March 25, 2002. You may submit comments by mail to: Mt. Adams Ranger District, Att'n Julie Knutson, Gotchen Interdisciplinary Team Leader, 2455 Hwy 141, Trout Lake, WA 98650; or by email to: jcknutson@fs.fed.us. If you would like to discuss this proposal, please call Julie Knutson at (509) 395- 3400 to arrange a meeting at the District Office in Trout Lake or the Forest Headquarters in Vancouver, Washington.

GREGORY L. COX
District Ranger

Gotchen Purpose and Need

Need For Action

Background

The Gotchen landscape is a 19,700-acre portion of the Gifford Pinchot National Forest generally south of Mt. Adams and east of the White Salmon River. (Refer to the attached Gotchen vicinity map.) The area includes late-successional forest that provides habitat for sustaining late-successional-dependent plant and animal communities. The area also provides a connectivity function linking late successional forest within and outside of the National Forest boundary.

Approximately 15,200 acres (77%) in Gotchen landscape are allocated as the Gotchen Late Successional Reserve (LSR), interspersed with Riparian Reserves. The LSRs are an integral component of the Gifford Pinchot National Forest Land Management Plan as amended by the 1994 NW Forest Plan, "…designed to maintain and enhance late successional forests as a network of existing old-growth forest ecosystems…" (*Basis for Standards and Guidelines*, B-5). They provide late successional and old growth habitat for viable, well-distributed population of species including the spotted owl, and help ensure that the full range of late successional biodiversity will be conserved (FEMAT IV-31).

The remaining 4500 acres (23%) are Matrix with interspersed Riparian Reserves. Matrix lands provide for a variety of resource and forest product needs, including regularly scheduled timber harvest. Refer to the accompanying map entitled " Management and Inventoried Roadless Areas" for the location of the LSR and matrix management areas.

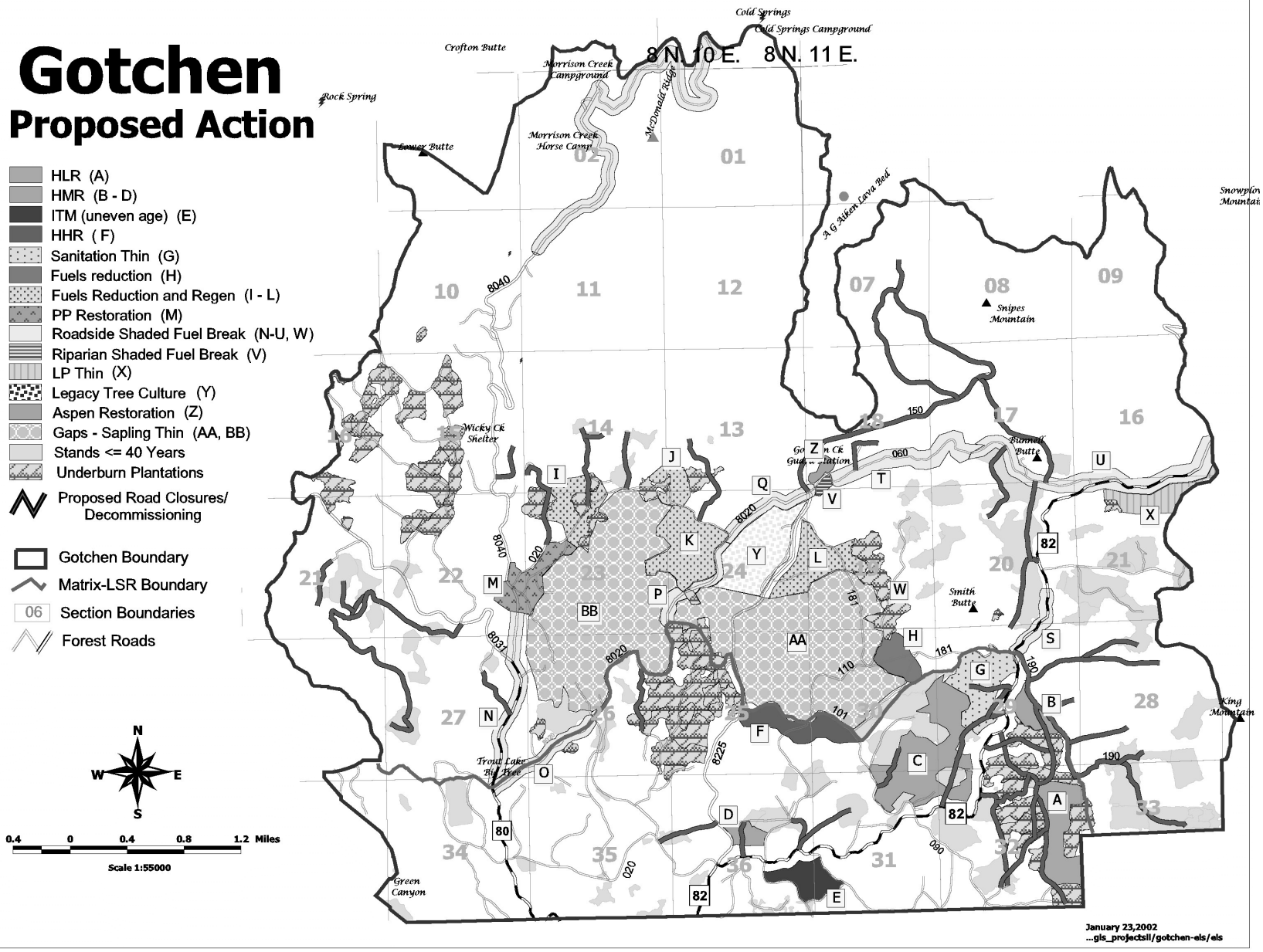
Management actions over the past century, including exclusion of stand-replacing wildfire, have resulted in a landscape characterized by densely stocked, contiguous stands of grand fir and Douglas-fir. Many of the old-growth trees that once dominated this landscape have been removed through timber harvest. The resulting late-successional forest conditions—for example, remnant ponderosa pine and Douglas-fir dominated by dense, multi-layered stands of predominately grand fir, with concentrations of down wood material—are the very attributes that make the area vulnerable to spruce budworm, root diseases, and ultimately, a stand replacement fire.

Spruce budworm was first detected at elevated levels in the eastern, dryer side of the Gotchen landscape in the early 1990s. Gotchen represents the western tip of the budworm epidemic that affects 300,000 acres of non-federal land to the east. At this time, spruce budworm has caused some defoliation in nearly all of the Gotchen landscape--96% of the planning area has had some defoliation from budworm since 1994. High levels of defoliation have been recorded on 8600 acres, or 46% of the planning area. While some insect and disease activity is endemic to forest ecosystems, the level of defoliation and mortality in portions of Gotchen area exceeds normal levels.

This defoliation is impacting LSR objectives in two primary ways. First, the budworm defoliation and resultant mortality is affecting fuel loading. Fuel loading has increased to where there is concern that initial attack would be unsuccessful in containing a large stand-replacing wildfire. It is estimated that 25% of the Gotchen landscape has hazardous fuel conditions.

Second, while some natural mortality contributes needed snags and down logs to late-successional forests, the late-successional function in Gotchen has been compromised as tree mortality has progressed. The insect and disease-killed and defoliated trees have reduced the canopy closure on stands throughout the Gotchen landscape to below 40 percent, deemed the threshold for functioning suitable spotted owl habitat. Within the Gotchen planning area, approximately 76% or the forest currently provides suitable habitat for the spotted owl. The natural decline and loss of suitable habitat is expected to continue throughout the area as forest stands die from stresses related to insects and disease. There are six known historic spotted owl activity center within the Gotchen area, but occupancy at this sites has declined. Only two activity centers were confirmed occupied in 2001.

Gotchen
Proposed Action



Gotchen

Proposed Road Closures/ Decommissionings

C 8040027 Current Status - CLOSED

8040027 Current Status - OPEN

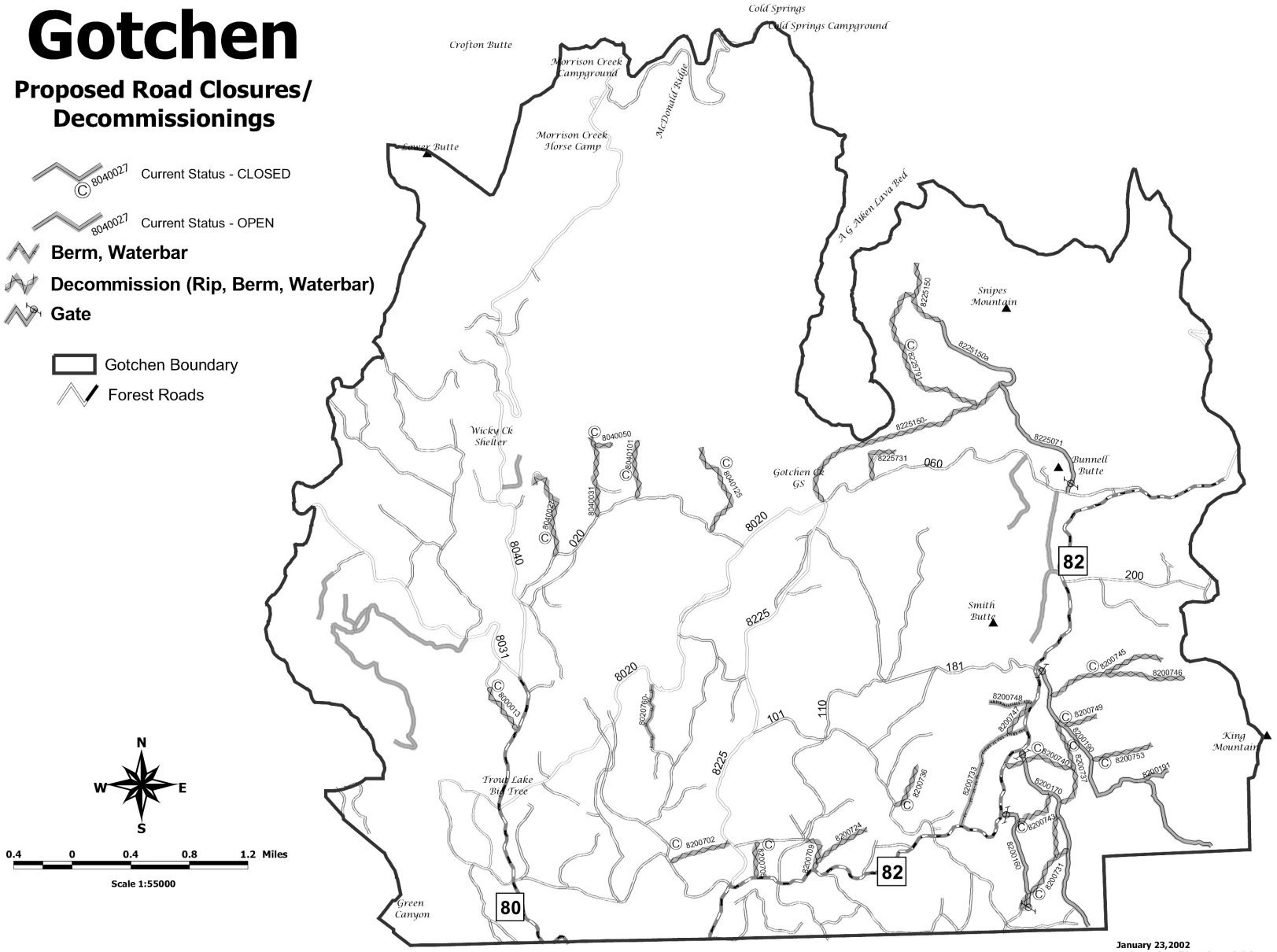
Berm, Waterbar

Decommission (Rip, Berm, Waterbar)

Gate

Gotchen Boundary

Forest Roads



GOTCHEN PROPOSED ACTION TABLE

Stand	Treatment	Acres Matrix	Acres LSR	Acres Heavy Equipment	Primary Product	Volume (CCF)
A	Light Retention (HLR)	97	-	88	Sawlogs	2,640
B	Moderate Retention (HMR)	30	-	27	Sawlogs	810
C	Moderate Retention (HMR)	205	-	184	Sawlogs	5,520
D	Moderate Retention (HMR)	23	-	21	Sawlogs	630
E	Uneven Age (ITM)	54	-	49	Sawlogs	290
F	Heavy Retention (HHR)	73	-	86	Sawlogs	1,720
G	Sanitation Thin	102	-	102	Sawlogs	1,020
H	Fuels Reduction	-	44	44	Chips	1,320
I	Fuels Reduction and Regeneration	-	67	55	Chips	1,650
J	Fuels Reduction and Regeneration	-	34	10	Chips	100
K	Fuels Reduction and Regeneration	-	123	28	Chips	280
L	Fuels Reduction and Regeneration	-	93	21	Chips	210
M	Ponderosa Pine--Understory Thin	-	74	74	Sawlogs	740
N	Shaded Fuelbreak	-	76	76	Sawlogs	1,520
O	Shaded Fuelbreak	32	22	54	Chips	540
P	Shaded Fuelbreak	-	33	33	Chips	660
Q	Shaded Fuelbreak	-	45	45	Chips	900
R	Shaded Fuelbreak	-	211	211	Chips	4,220
S	Shaded Fuelbreak	-	33	33	Chips	660
T	Shaded Fuelbreak	-	91	91	Sawlogs	1,820
U	Shaded Fuelbreak	-	144	144	Sawlogs	2,880
V	Shaded Fuelbreak Riparian	-	7	5	Sawlogs	100
W	Shaded Fuelbreak	-	3	3	Chips	60
X	Lodgepole Pine --Understory Thin	-	55	50	Sawlogs	1,500
Y	Legacy Tree Culture	-	139	-	-	-
Z	Aspen Restoration	-	11	-	Firewood	10
AA	Gap Sapling Thin	-	651	-	-	-
BB	Gap Sapling Thin	-	660	-	-	-
	Young Stand Thin/Underburn	503	464	-	-	-
	Totals	1119	3080	1534		31,800

Gotchen Road Proposals

Road	Miles	LRMP	Current Status	Mgmt Change	Action Needed	Why
8020760	0.1	Matrix	Open	Close	Berm, waterbar	Improve wildlife habitat. Future access needed for forest mgmt.
8200160	0.6	Matrix	Open	Close	Gate	Improve wildlife habitat. Reduce fire ignitions. Access needed for fire and range mgmt.
8200170	1.3	Matrix	Open	Close	Gate	Improve wildlife habitat. Reduce fire ignitions. Access needed for fire and range mgmt.
8200190	2.3	LSR Matrix	Open	Close	Gate	Improve wildlife habitat. Reduce fire ignitions. Access needed for fire and range mgmt.
8200191	0.7	LSR	Open	Close	Gate on Rd 8200190	Improve wildlife habitat. Reduce fire ignitions. Access not needed for mgmt. Access controlled by Rd 8200190
8200733	1.0	Matrix	Open	Close	Berm, waterbar	Improve wildlife habitat. Future access needed for forest mgmt.
8200748	0.3	Matrix	Open	Close	Berm, waterbar	Improve wildlife habitat. Future access needed for forest mgmt.
8225071	1.1	LSR	Open	Close	Gate	Improve wildlife habitat and reduce fire ignitions. Access needed for fire and range mgmt.
8225150	0.8	LSR	Open	Close	Gate on Rd 8225071	Middle segment of Road 8225150. Improve wildlife habitat and reduce fire ignitions. Access needed for fire and range mgmt. Access controlled by Rd 8225071.
8040031	0.6	LSR	Open	Decommission	Berm, waterbar, rip	Improve wildlife habitat. Reduce fire ignitions. Access not needed for mgmt.
8200709	0.4	Matrix	Open	Decommission	Berm, waterbar, rip	Improve wildlife habitat. Access not needed for mgmt.
8200724	0.7	Matrix	Open	Decommission	Berm, waterbar, rip	Improve wildlife habitat. Access not needed for mgmt.
8200747	0.2	Matrix	Open	Decommission	Waterbar, rip	Improve wildlife habitat. Access not needed for mgmt., post Gotchen. Access controlled by Rds 8200748 and 8200733.

8225150	1.7	LSR	Open	Decommission	Berm, waterbar, rip, remove culverts, relocate trail head	Lower segment of Road 8225150. Improve wildlife habitat and water quality. Access not needed for mgmt if Snipes Trailhead moved to Rd 8200060.
8225150	0.5	LSR	Open	Decommission	Berm, waterbar, rip	Upper segment of Road 8225150. Improve wildlife habitat and reduce fire ignitions. Access not needed for mgmt.
8225731	0.3	LSR	Open	Decommission	Berm, waterbar, rip	Improve wildlife habitat. Reduce fire ignitions. Access not needed for mgmt.
8000013	0.2	LSR	Closed	Decommission	Berm, waterbar, rip	Improve wildlife habitat. Access not need for mgmt. Existing closure ineffective.
8040027	1.0	LSR	Closed	Decommission	Berm, waterbar, rip	Improve wildlife habitat and water quality. Reduce fire ignitions. Access not needed for mgmt. Existing closure ineffective.
8040050	0.1	LSR	Closed	Decommission	Berm, waterbar, rip	Improve wildlife habitat. Reduce fire ignitions. Access not needed for mgmt. Existing closure ineffective
8040101	0.3	LSR	Closed	Decommission	Berm, waterbar, rip	Improve wildlife habitat. Reduce fire ignitions. Access not needed for mgmt. Existing closure ineffective
8040125	0.8	LSR	Closed	Decommission	Berm, waterbar, rip	Improve wildlife habitat. Reduce fire ignitions. Access not needed for mgmt. Existing closure ineffective
8200702	0.6	Matrix	Closed	Decommission	Berm, waterbar, rip	Improve wildlife habitat. Access not needed for mgmt. Existing closure ineffective.
8200705	0.4	Matrix	Closed	Decommission	Berm, waterbar, rip	Improve wildlife habitat. Access not needed for mgmt., post Gotchen.
8200731	0.7	Matrix	Closed	Decommission	Berm, waterbar, rip	Improve wildlife habitat. Access not needed for mgmt. Closure not effective.
8200736	0.3	Matrix	Closed	Decommission	Berm, waterbar,rip	Improve wildlife habitat. Access not needed for mgmt., post Gotchen.
8200737	0.3	Matrix	Closed	Decommission	Gates on Rd 8200170 and Rd 8200190	Improve wildlife habitat. Access not needed for mgmt. Road allowed to brush in naturally.
8200740	0.3	Matrix	Closed	Decommission	Berm, waterbar, rip	Improve wildlife habitat. Access not need for mgmt. Existing closure ineffective.

8200743	0.3	Matrix	Closed	Decommission	Gates on Rd 8200160 and Rd 8200170	Improve wildlife habitat. Access not needed for mgmt. Road allowed to brush in naturally.
8200745	0.7	LSR	Closed	Decommission	Gate on Rd 8200190	Improve wildlife habitat. Access not needed for mgmt. Road allowed to brush in naturally.
8200746	0.5	LSR	Closed	Decommission	Gate on Rd 8200190	Improve wildlife habitat. Access not needed for mgmt. Road allowed to brush in naturally.
8200749	0.4	LSR	Closed	Decommission	Gate on Rd 8200190	Improve wildlife habitat. Access not needed for mgmt. Road allowed to brush in naturally.
8200753	0.5	LSR	Closed	Decommission	Gate on Rd 8200190	Improve wildlife habitat. Access not needed for mgmt. Road allowed to brush in naturally.
8225791	1.3	LSR	Closed	Decommission	Berm, waterbar, rip	Improve wildlife habitat and water quality. Reduce fire ignitions. Access not needed for mgmt. Existing closure ineffective.

Open roads that would be changed to closed - 8.2 miles

Open roads that would be changed to decommissioned - 4.4 miles

Closed roads that would be changed to decommissioned - 8.7 miles

GOTCHEN PROPOSED ACTION TREATMENT DETAILS

Stand A – Light Forest Retention - Matrix

Stand Objectives (Common for Stands A, B, C, D, E, F, and G)

- Harvest recently killed and dying grand fir (GF).
- Reduced fuels and fire spread potential within stands and across landscape.
- Meet Forest Plan minimum standards for live tree retention, snags, and downed logs.
- Increase stocking of ponderosa pine (PP), western larch (WL) and Douglas-fir (DF) to increase resiliency to disturbance from fire, insects, and disease.

Current Condition

- This stand is dominated by grand fir 80-100 years of age. There are low numbers of DF, WL, and PP in the same age group.
- Insect and disease mortality to grand fir is low to moderate. Annosus root disease is leading to notable amounts of windthrow to grand fir.
- Past partial cutting within this stand removed 50% of the large tree cover. Insects, disease, and windfall have further reduced overstory cover to 35%.
- Stand is primarily single story except for dense patches of saplings growing within landings and other small openings resulting from a partial cut in 1980.
- Late-successional, but not suitable owl habitat.

Treatment

A commercial timber sale would remove recently killed and declining grand fir, along with Douglas-fir severely infected (>1/3 crown) with dwarf mistletoe.
Light Forest Retention leaving 15% overstory cover in aggregates and dispersed treesLarge (<1 ac) uncut aggregates would be left totaling 10.5% of the unit area. Individual leave trees at a density of 20-25 trees per acre would be left across the cut portion of the unit.

- Dispersed leave trees include the largest and oldest trees in the stand (PP 150+ years) plus WL and DF. The healthiest grand fir would also be left as necessary to meet the leave tree density, but this is likely to be very few trees.
- Fine fuels would be reduced to 3 tons per acre. Downed fuels may be chipped or burned (criteria to be established).
- Cut portions of the stand would be planted with PP, WL, and DF to establish 300 trees per acre.

Stands B, C, and D - Moderate Forest Retention - Matrix

Current Condition

- These stands are dominated by grand fir 80-100 years of age. Additional DF, WL, and PP in the same age group are also present. PP that is 150 –250 years of age is also present in very low numbers.
- Insect and disease mortality to grand fir is moderate to high. Top kill due to spruce budworm has occurred to the majority of grand fir in this stand.
- Stand is primarily single story except for dense patches of saplings growing within landings and other small openings resulting from a partial cut in 1980.
- Late-successional and suitable spotted owl habitat.

Treatment

- A commercial timber sale would remove recently killed and declining grand fir, along with Douglas-fir severely infected (>1/3 crown) with dwarf mistletoe
- Moderate Forest Retention leaving 30% overstory cover in aggregates and dispersed trees. Large (<1 ac) uncut aggregates would be left totaling 10.5% of the unit area. Individual leave trees at a density of 20-25 trees per acre would be left across the cut portion of the unit.
- Individual leave trees would include the largest and oldest trees in the stand (PP 150+ years) plus WL and DF. The healthiest grand fir would also be left as necessary to meet the leave tree density, but this is likely to be very few trees.
- Fine fuels would be reduced to 3 tons per acre. Downed fuels may be chipped or burned (criteria to be established).
- Cut portions of the stand would be planted with PP, WL, and DF to establish of 300 trees per acre.

Stand E – Uneven Age Management- Matrix

Additional Stand Objective

- Maintain numbers and vigor of Oregon white oak.

Current Condition

- This stand is mix of species and age classes reflecting past partial cuts. Conifer species in the overstory and understory is evenly mixed between DF, GP, and PP, with low numbers of WL and Oregon white oak. This stand is tending toward an uneven aged distribution, with a few old-growth PP, more numerous 80-year-old DF and GF, and mix of younger age groups in the 1 to 12 inch DBH class.
- Previous partial cut opened the canopy enough to permit the establishment of notable quantities of PP and WL in the understory. However, GF reproduction in more prevalent and without disturbance, GF will create a dense understory.
- Insect and disease mortality to grand fir in the overstory is low.
- Late-successional but not suitable spotted owl habitat.

Treatment

- Commercial tree removal would be from the small and medium saw sized trees (8-21 inches), comprised of the poorest grand fir (dead tops, diseased) and some Douglas-fir with heavy dwarf mistletoe (>1/3 crown infected).
- Uneven aged individual trees selection leaving about 50% overstory cover. This would include trees in the pole to small saw size class. Large (<1 ac) uncut aggregates would be left totaling 10.5% of the unit area. Preferable area for the large uncut aggregated would be the southwest corner of the stand where there is a greater density of large trees.
- Dead trees would be left standing to the extent possible. If needed green trees would be converted into snags so that there are 3.6 snags per acre.
- Fine fuels would be reduced to 3 tons per acre. Understory burning to achieve the down fuels objective need consider survival of advanced PP, WL, and DF regeneration.
- Natural seeding would provide addition conifer stocking over time.

Stand F--Heavy Forest Retention – Matrix

Additional Stand Objectives

- Retain dispersal and foraging habitat for spotted owls.
- Component of LSR Fuelbreak

Current Condition

- This stand is dominated by grand fir 80-100 years of age. Additional DF, WL, and PP in the same age group are also present. PP that is 150 –250 years of age is also present in very low numbers.
- Insect and disease mortality to grand fir is moderate. Top kill due to spruce budworm has occurred to the majority of grand fir in this stand.
- Stand is primarily single story except for dense patches of saplings growing within landings and other small openings resulting from a partial cut in 1980.
- Existing dispersal and foraging habitat (suitable) for spotted owls is poor quality habitat.

Treatment

- A commercial timber sale would remove recently killed and declining grand fir, along with Douglas-fir severely infected (>1/3 crown) with dwarf mistletoe
- Heavy Forest Retention leaving 40% overstory cover in aggregates and dispersed trees. Large (<1 ac) uncut aggregates would be left totaling 10.5% of the unit area. Individual leave trees at a density of 30-35 trees per acre would be left across the cut portion of the unit.
- Leave trees would include the largest and oldest trees in the stand (PP 150+ years) plus WL and DF. The healthiest grand fir would also be left as necessary to meet the leave tree density.
- Fine fuels would be reduced to 3 tons per acre. Downed fuels may be chipped or burned (criteria to be established).
- Cut portions of the stand would be planted with PP, WL, and DF at a density of 200 trees per acre.

Stand G -- Sanitation Thin - Matrix

Additional Stand Objective

- Retain dispersal and foraging (suitable) habitat for spotted owls.
- Serves as a Shaded Fuelbreak in the vicinity Smith Butte at the stand level as opposed to a road corridor. Road 8200080 would provide an anchor for access and control efforts.
-

Current Condition

- This stand is dominated by grand fir 80-100 years of age. Additional DF, WL, and PP in the same age group are also present. PP that is 150 –250 years of age is also present in very low numbers.
- Insect and disease mortality to grand fir is low to moderate. Top kill due to spruce budworm has occurred to the majority of grand fir in this stand.
- Stand is primarily single story except for dense patches of saplings growing within landings and other small openings resulting from a partial cut in 1980.
- Late-successional and suitable spotted owl habitat.

Treatment

- A commercial timber sale would remove recently killed and declining grand fir, along with Douglas-fir severely infected (>1/3 crown) with dwarf mistletoe.
- Sanitation Thinning leaving 50% of the overstory cover in aggregates and dispersed trees. Large (<1 ac) uncut aggregates would be left totaling 10.5% of the unit area. Elsewhere the overstory canopy would be reduced to between 35% cover (pockets of dead/dying grand fir) to 65% cover (healthy DF/PP).
- Leave trees would include the largest and oldest trees in the stand (PP 150+ years) plus WL and DF. The healthiest grand fir would also be left as necessary to meet the leave tree density.
- Down logs would be left at a minimum 120 linear feet per acre, 16 feet long and 16 inches diameter large end, and decay class 1 or 2.
- Fine fuels would be reduced to 3 tons per acre. Downed fuels may be chipped or burned (criteria to be established).
- Dense sapling patches within gaps would be thinned to 100 trees/per acre, removing GF.
- Future underburning is possible.

Stand H --Fuels Reduction – Gotchen LSR.

Stand Objectives

- Primary objective for this stand is to serve as a Shaded Fuelbreak for Smith Butte, but to do so at the stand level as opposed to a road corridor. Roads 080 and 110 would still provide an anchor for access and control efforts.
- Retain dispersal and foraging (suitable) habitat for spotted owls.

Current Condition

- This stand is dominated by grand fir 80-100 years of age. Additional DF, WL, and PP in the same age group are also present. PP that is 150 –250 years of age is also present in very low numbers.
- Insect and disease mortality to grand fir is high resulting in only 45% live canopy cover
- Stand is primarily single story except for dense patches of saplings growing within landings and other small openings resulting from a partial cut in 1980.
- Late-successional and suitable spotted owl habitat.

Treatment

- Leave all live trees in the overstory.
- Snags in excess of 7 snags per acre would be felled. Downed trees in excess of 12 tons per acre (2% cover) would be chipped.
- Fine fuels would be reduced to 3 tons per acre by underburning.
- Dense sapling patches would be thinned to100 trees per acre, removing GF, should underburning not achieve this density.
- Future underburning is possible.

Stand I--Fuels Reduction and Regeneration – Gotchen LSR

Stand Objectives

- Reduce fuels and firespread potential within stand and across landscape (LSR fuelbreak and adjacent stand).
- Reduce the potential for a continuous crown fire by creating a discontinuous forest canopy less than 40% cover.
- Provide enough light for PP, WL, and DF establishment and growth, which over time would improve the resiliency of the stand and landscape to fire and spruce budworm.

Current Condition

- This stands is dominated by grand fir 80-100 years of age. Additional DF, WL, and PP in the same age group are also present. PP that is 150 –250 years of age is also present in very low numbers.
- Stand is primarily single story except for dense patches of saplings growing within landings and other small openings resulting from a partial cut in 1980.
- Insect and disease mortality to grand fir is light to high. Some portions of the stand have very little mortality.
- Canopy cover is presently 45%, but is expected to decline to below 40% in the next five years due to continued mortality from insects and armillaria and laminated root rots.
- Suitable owl habitat now, but most likely won’t be in 5 years.

Treatment

- Leave portions of the stand with little to no mortality (generally greater preponderance of DF and PP). This is approximately 20% of the stand.

- For the remainder of the stand, leave 35% overstory cover comprised DF, PP, WL, and ES along with the largest GF to meet the cover target. This is approximately 30 trees per acre or 80 sq ft BA for trees in the largest size classes.
- Remove declining GF and healthy GF within 50 feet of old-growth PP (legacy tree culturing).
- Within 250 feet of the Road 8040020, snags in excess of 7 snags (recently killed) per acre will be felled. Beyond 250 feet up to all snags would be left standing (minimum 11).
- Within 250 feet of Road 8040020, logs in excess of 12 tons per acre (2% cover) would be chipped or removed as saw logs if merchantable. Beyond 250 feet, merchantable logs in excess of 50 tons per acre (6% cover) would be removed. Cull logs and near-term snag falldown is expected to push total large wood cover to 10%.
- Fine fuels would be reduced to 3 tons per acre by hand piling and burning, or underburning (criteria to be established).
- Stand would be planted with PP, WL, and DF to establish 200 trees per acre.
- A light underburn would be prescribed to consume some fines and grand fir seedlings and saplings. All portions of the stand would be planted with PP, WL and DF to establish 200 trees per acre.
- Future underburning is possible.

Stands J, K and L -- Fuels Reduction and Regeneration – Gotchen LSR.

Stand Objectives

- Reduce fuels and fire spread potential within stand and across landscape (LSR fuelbreak) through reduction of snags and ground fuels. These stands are adjacent to the road corridors targeted for Shaded Fuelbreaks. Insect and disease have already resulted in a live forest canopy less than 35% cover.
- Plant all portions of the stand with PP, WL, and DF to establish 200 trees per acre. (Because these stands have or will decline to the point where they are no longer suitable habitat, regeneration of PP, WL, and DF is appropriate.)

Current Condition

- These stands are dominated by grand fir 80-100 years of age. Additional DF, WL, and PP in the same age group are also present. PP that is 150 –250 years of age is also present in very low numbers.
- Stands are primarily single story except for dense patches of saplings growing within landings and other small openings resulting from a partial cut in 1980. In Stands K and L the overstory has been sufficiently open to permit advanced conifer regeneration throughout the stand.
- Insect and disease mortality to grand fir is moderate to high.
- Canopy cover has declined to less than 40%, thus stands are not considered suitable habitat.

Treatment

- No live trees in the overstory would be felled.
- Within 250 feet of primary roads, snags in excess of 7 snags per acre would be felled, and downed trees in excess of 12 tons per acre (2% cover) would be chipped. Fine fuels would be reduced to 3 tons per acre by underburning. Fine fuels within 250 feet of road may be chipped or piled and burned prior to underburning entire unit.

- Underburn intensity should seek to consume fine fuels and kill GF seedlings and saplings, yet maintain PP and WL saplings.
- Stand would be planted with PP, WL, and DF to establish 200 trees per acre.
- Future underburning is possible.

Stands N through W -- Shaded Fuelbreaks – Gotchen LSR

Stand Objectives

- Reduced fuels and fire spread potential within treatment area and across landscape (LSR fuelbreak). These stands are adjacent to roads, which compartmentalize the LSR when combined with plantations and other treatment units.
- Maintain as dispersal spotted owl habitat. (Currently losing suitable capability.)

Current Condition

- Most stands are dominated by grand fir 80-100 years of age. Additional DF, WL, and PP in the same age group are also present. PP that is 150 –250 years of age is also present in very low numbers.
- Near Gotchen Creek Guard Station and eastward along Road 8200060, these stand have a higher component of lodgepole pine of various ages, which has created a dense, mid-level canopy layer.
- Overall mortality within these stands is light to moderate.
- Despite occasional gaps or pockets of mortality, these stands are suitable owl habitat. Average canopy cover exceeds 50%.

Treatment

- Leave 40% overstory cover comprised DF, PP, WL, and ES (Englemann Spruce) along with the largest GF to meet the cover target. Live trees would need to be felled to achieve this canopy target.
- Stand P would retain a canopy closure of 50%, due to proximity to spotted owl activity centers. (For a Shaded Fuelbreak to be effective, the stands should have canopy densities (40%) that would cause a crown fire to drop to the ground. This level of canopy closure is compromise – lower canopy closure would be more effective in reducing crown fire, but 40% crown cover is the minimum needed to maintain dispersal function for spotted owls.).
- Remove declining GF and healthy GF within 50 feet of old-growth PP (legacy tree culturing). Remove intermediate size trees (GF, LP, DF) with the exception of five 1/100 acre clumps per acre.
- Leave up to 7 snags (recently killed trees) standing. Within younger, smaller diameter stands (lodgepole), leave only 4 snags per acre.
- Felled trees and snags in excess of excess of 12 tons per acre (2% cover) would be chipped or removed as saw logs if merchantable.
- Fine fuels would be reduced to 3 tons per acre by chipping, hand piling and burning, or underburning (criteria to be established).
- Future underburning is possible.

Stand M -- Ponderosa Pine Understory Thin – Gotchen LSR

Stand Objectives

- Reduce fuels and create Shaded Fuelbreak
- Maintain old growth condition and suitable spotted owl habitat
- Maintain some screening in the camping area.

Current Condition

- Old-growth stand dominated by PP 200 + years, lesser amount of DF and GF in younger age classes.
- Understory layer of GF comprised of saplings to 20" dbh trees.
- Classic old-growth pine stand with an understory of GF/DF that has established since fire exclusion. Canopy cover ~80%
- GF defoliation is light with little mortality as an overall % of the stand.
- Stand surrounds Road 8040 and 8040020 junction, key location for fire suppression strategies.
- Cherry Flats concentrated use area (popular hunter camp in the fall).

Treatment

- This stand surrounds the Road 8040 and 8040020 junction, and is a key location for anchoring the Shaded Fuelbreak strategy.
- Because overstory has more PP, the same reduction in crown fire potential with crown can be achieved at 60%, compared to fir dominated stands with 40% crown cover. This is due to the lower bulk density crowns of the old-growth PP
- Remove 2/3's of the 6-20" dbh grand fir. Focus removal on GF growing beneath PP. Keep overstory cover >60%. Promote clumpiness when leaving GF. Will yield merchantable wood product.
- Keep snags wherever it is safe to do so. Desire at least 7 snags per acre.
- Cut saplings, except where necessary for campsite screening at Cherry Flats.
- Hand pile slash and burn. Large fuel loading remains near or slightly above current levels (~10 tons/ac or 2% cover). Fine fuel loading reduced to 3 tons/acre.
- Future underburning is possible.

Stand X -- Lodgepole Pine Understory Thin – Gotchen LSR

Stand Objectives

- Reduce fuels and create Shaded Fuelbreak
- Maintain dispersal quality spotted owl habitat
- Reduce risk of mountain pine beetle mortality.

Current Condition

- Dense stand of lodgepole pine (LP) and GF with lesser amounts of DF and PP. A range of ages and size classes are present.
- Canopy cover is 80-90%. While canopy closure provides dispersal habitat, it is not considered suitable habitat because the average tree diameter is not large enough.
- Little budworm activity due to discontinuous arrangement of host species. High potential for mountain pine beetle due to high stem density of LP.
- Stand is adjacent to Road 82 and would link Shaded Fuelbreaks along Road 82 to plantations and treated stands on the Yakama Reservation.

- Stand has a high potential for crown fire due to the high stem density and crown closure.

Treatment

- Reduce the amount of LP and GF in the understory to reduce mortality potential from insects with corresponding decrease in crown fire. Thin from below LP and GF, such that overstory remains at 40% canopy cover.
- Leave uncut aggregated 1-2 acres in size to provide cover and structure.
- Keep snags wherever it is safe to do so. Desire at least 4 snags per acre; this is an intermediate age stand and the large snags (>25") are not present.
- Maching pile slash and burn. Keep large fuel load near or slightly above current levels (~10 tons/ac or 2% cover). Reduce fine fuel loading to 3 tons/acre.

Stand Y -- Legacy Tree Culturing – Gotchen LSR

Stand Objectives

- Reduce competition for dominant ponderosa pine, to reduce stress and loss to western pine beetle.
- Keep large remnant ponderosa pine in the landscape (risk reduction)
- Maintain current habitat suitability for northern spotted owl.

Current Condition

- This stand is comprised primarily with GF 80-100 years of age with lesser amounts of DF and PP of similar cohort. There are also scattered PP and DF, which are approximately 150+ year of age.
- Because the recent budworm epidemic is not resulting in much GF mortality in this stand, the older PP have received little respite from competition. It is assumed that trees growing within 2 crown lengths (about 50 feet) of the larger PP cause the greatest competition for moisture and nutrients.
- Canopy cover is 70%. This stand was lightly partial cut in the 1980's.
- Budworm activity is light, with little mortality as a % of the stand.
- Downed fuel loading is 10 tons, 1-2% cover.

Treatment

- Thin approximately half of the codominant and intermediate trees growing within 50 feet of the older PP. Fell or girdle half of the trees within 50 feet of dominant PP. Culture only half of the PP in the stands, so as to retain the stands current late-successional structure and suitable conditions for spotted owl (overstory cover remains >65%). PP with the best crown conditions should be selected for culturing. This is about 1-2 trees per acre.
- Leave cut trees on site increasing large fuel loading to ~15 tons/ac (2-3% cover).
- Handpile concentrations of fine fuels where there are close to Road 8225.
- Future underburning is not scheduled.

Stand Z -- Aspen Restoration – Gotchen LSR

Stand Objectives

Reduce competition around quaking aspen near Gotchen Creek Guard Station.

Fall hazard trees (approximately 10) that threaten the Gotchen Creek Guard Station.

Maintain mardon skipper butterfly within grass meadows.

Current Condition

- Grassy meadow dominated by fescue grasses.
- Aspen are scattered around the perimeter and interior of the meadow in clumps of mature trees and other clonal patches of saplings.
- Interspersed with aspen are PP and LP, which have seeded into meadow. Conifers are a variety of sizes and ages up to 80 years old.
- Canopy cover is 80%. This stand was lightly partial cut in the 1980's.
- Budworm activity is light.
- Downed fuel loading from wood is very low within the meadow.

Treatment

- Fell LP and PP that are from 2 feet tall to 10 inches dbh. Remove the large boles for firewood. Pile and burn remaining slash.
- Fell trees with mechanical defect or root/butt decay that threaten to fall on the Gotchen Creek Guard Station. Buck for firewood. Pile and burn slash.
- Consider cutting and pile burning around some decrepit, older aspen to encourage aspen regeneration.
- Consider fencing the larger populations of young aspen to protect from cattle/ungulate grazing.
- Future underburning is possible.

Gap Sapling Thinning – Stands AA and BB - Gotchen LSR

Stand Objectives

Control tree density and species mix within the dense sapling patches that have established in former landings and other gaps of an otherwise late-successional stand. (Past partial cutting and grand fir mortality has pockmarked these stands, reducing the quality of habitat and increasing fire risk. However, these stands are surrounded by plantations, Shaded Fuelbreaks, and other proposed treatments. Consequently, aggressive action to address fire risk and habitat quality are not necessary.)

- Add mid level structure to the stand, and increase proportionate stocking of PP and WL.

.Current Condition

- These stands are dominated by grand fir 80-100 years of age. Additional DF, WL, and PP in the same age group are also present. PP that is 150 –250 years of age is also present in very low numbers.
- Stand is primarily single story except for dense patches of saplings growing within landings and other small openings resulting from a partial cut in 1980.
- Stands are considered late-successional and suitable habitat for the northern spotted owl.
- Sapling patches are very dense (500+ trees/ac) and primarily GF and DF, with few PP and WL.

- Insect and disease mortality to grand fir is considered moderate but varies greatly throughout the stands. In some places, mortality is expanding gaps, such that discrete stands (Group 4 and 5) could be delineated.

Treatment

Within sapling patches, fell all GF (2-15 feet tall) and a portion of the DF such that residual stocking is 100 trees per acre comprised of DF, PP, and WL

- Disperse thinning slash.
- Future underburning is not scheduled.

Young Forest (Plantation) Thinning and Underburning – Multiple Stands – Matrix and Gotchen LSR

Stand Objectives

- Control tree density and stocking mix to promote a forest resilient to disturbance.
- Keep fine fuel loads low.

Current Condition

- Plantations are young stands of planted and naturally seeded trees that were established following a regeneration-cut timber harvest. Tree age is uniform within plantations, though plantation age may vary from 5 to 30 years old. In most cases plantations are primarily stocked with PP; however, there may be DF, WL, LP. GF will also be present.
- The oldest plantations, 30 years of age, had trees established at very high densities (400+ trees per acre) and are likely to have been non-commercially thinned in the last 10 years to reduce stocking to 200-300 trees per acre. The younger plantations were planted at 300-400 trees per acre.
- Most plantations have low fuel loads. Slash would have been treated following the initial timber harvest. Some recently thinned plantations may have additional fine fuels from thinned trees, which were cut and left on-site.

Treatment

- Non commercial thinning should target plantations with very high tree densities, where underburning could not be controlled due to tree density, tree/crown height, ground fuels or other physical constraints. In most cases, plantations need an initial manual thinning prior to underburning. Non-commercial thinning should leave the largest PP, DF, and WL at densities of 100-200 trees per acre. Leave trees spacing should be irregular due to leaving the largest trees of the desired species wherever they occur.
- Non-commercial thinning of adjoining plantations should be timed to avoid contiguous areas of red slash. Post thinning slash poses an extreme fire threat for three years following thinning.
- Underburning would focus on stands where the dominant tree density has been lowered. Adjoining plantations and Shaded Fuelbreaks should be burned together to maximize operational efficiency and increase ecological patch size. These combined burning operations would mostly likely be future projects, (25 years out) when plantations are larger, and Shaded Fuelbreaks are in need of maintenance.
- Timing of underburning should target the consumption of fine ground fuels, intended mortality of tree seedlings and grand fir saplings, and mitigate impacts to wildlife breeding and air quality.

GOTCHEN ISSUES

Principle Issues

The issues described below are those that could potentially result from the proposed action and would drive the formulation of other alternatives.

Late-Successional and Old Growth Forest

The Gotchen Planning Area includes a Late-Successional Reserve (LSR) as designated in the Northwest Forest Plan. Proposed management actions could affect the amount and continuity of late-successional forests within the LSR. Actions that remove, degrade, or fragment late-successional forest may adversely affect wildlife species associated with these forests. The Gotchen Planning Area also includes a portion of matrix lands.

Northern Spotted Owl and Designated Northern Spotted Owl Critical Habitat

The northern spotted owl is a federal listed threatened species. There are six known owl activity centers. Proposed treatments designated to reduce fuels and improve forest health in the Gotchen area may degrade or remove late-successional forest that provides habitat for northern spotted owls. Proposed actions could result in harm to spotted owls by removing or degrading habitat below the incidental take threshold (40% suitable habitat within a 1.8- mile radius and 50% suitable habitat within a 0.7-mile radius of a spotted owl activity center). One activity center within the Gotchen area is currently below this threshold at the 0.7-mile radius.

Approximately 89% (17,578 acres) of the Gotchen Planning Area is within the northern spotted owl Critical Habitat Unit WA-42. Critical habitat was designated for the spotted owl to provide nesting, roosting, and foraging habitat essential for the northern spotted owls continued survival. Designation of LSR's is the primary means of providing that habitat. Loss of habitat and noise disruption may cause incidental take or adversely affect spotted owls in general. Proposed treatments that remove or degrade habitat would be considered an adverse affect to spotted owl Critical Habitat.

Wildlife Association With Legacy Trees, Snags, and Down Wood

Proposed actions that result in a potential loss or reduction of late-successional forest components such as old growth trees, snags and down wood could be detrimental to some wildlife species. Snag and down-wood dependent species include bats, neotropical and migratory birds, woodpeckers, small mammals, forest carnivores, terrestrial mollusks, amphibians, and other cavity-dependent species.

Mardon Skipper

The mardon skipper is a non-migratory butterfly that inhabits grassy meadows and young forests within the Gotchen area. The mardon skipper butterfly is a Washington State endangered species and a federal candidate species for listing under the Endangered Species Act. Proposed treatments such as prescribed burning could directly affect mardon skippers.

Water Quantity and Quality Changes

The proposed activities of the Gotchen project would reduce mature forest cover in some portions in the White Salmon River drainage. This may cause changes in runoff from this area. At issue is how these changes combine with changes that have occurred from past harvest and road building in the area to affect water quality, quantity, and timing in streams draining the Gotchen area, and in the White Salmon River.

Public Road Access

Closing or decommissioning roads previously open to the public would reduce vehicle access. This could affect the mode in which the public recreates or conducts other activities in this portion of the Gifford Pinchot National Forest.

APPENDIX C

APPENDIX C SUMMARY OF PUBLIC SCOPING COMMENTS BY TOPIC

PURPOSE and NEED

- Include projects that focus on rehabilitating the forest ecosystem—"beyond mere road closures and mitigation for damage being done by the projects."
- Rehabilitate areas in which the FS plans to undertake logging operations.
- Focus more on health of the forest rather than producing a commodity.
- Refrain from tampering with the existing condition of the LSR absent scientific findings that burning and timber harvest are *required* to aid the development of spotted owl habitat.
- Unclear on desired outcomes: restore the forest to pre-management climax or simply reduce the risk of stand replacing fire.

FUELS

- Include fire-modeling data necessary to evaluate the placement and efficacy of Fuelbreaks. Develop and apply a fire model that will analyze the probability of ignition points and any resulting fire's behavior, and then help determine the most effective, least disruptive risk reduction program.
- Fuels reduction measures are more appropriate within the Matrix than LSR; some proposed actions in the LSR are likely to adversely affect northern spotted owls, goshawks and other late-seral species of concern.
- The FS has not yet provided information that demonstrates that fire exclusion, grazing, and past logging practices have changed the structure and composition of forest stands in the Gotchen area from a low intensity, low severity fire regime to a high intensity, high severity regime.
- We request baseline information on historic stand structure, composition, and fire regime to support the purposed and need for this project. The information may be provided through fire histories, photographs, and reconstruction of historic stand structure of the Gotchen Planning Area and adjacent areas.
- We also request information on historical and current stand structure and composition. Quantified data is preferred, but qualitative information is also useful.
- …we would like the FS to show that the strategies and objective proposed will meet the objective of restoring stands to its natural fire regime. The current density objective of 200-300 trees/acres is generally used to re-create 'widely spaces, park-like ponderosa pine stands' east of the Cascades. The Gotchen area is not likely to fit this mold as it is geographically juxtaposed in a transitional area between the west and east-sites of the Cascade Range.
- We request that the agency justify with site specific information its objectives of creating stands that are 200-300 trees per acre and for creating a 50' buffer around remnant old

growth PP and DF trees. This reiterates the need for baseline information on historic forest structure and composition and fire regime for the Gotchen Planning Area.

Surface Fuels

- Commend the FS for focusing some of its efforts on surface fuels and for setting objectives regarding acceptable surface fuel loadings.
- Develop tactics that meet outlined objectives so stands are indeed "fire safe";
- Monitor surface fuel loadings b/a treatment;
- Develop long term surface fuel loading goals, and continue to monitor;
- Examine methods of prescribed fire, rather than or in addition to mechanical treatments that target small diameter trees.

Ladder Fuels

- Scoping notice does not address the lower branches of trees—particularly the lower branches of most conifer species…that often are in contact with surface fuels.
    - Focus more on pruning of lower branches of trees and less on removing large trees;
    - Focus on true fire restoration as opposed to emphasizing commercial timber incentives;
    - Develop an action alternative that utilizes pre-commercial thinning of small diameter trees in areas that are proposed for commercial logging.
    - Utilize diameter limits for areas proposed for logging.

Prescribed management fire and prescribed fire

- Encourage the reintroduction of fire—through use of prescribed management fire and prescribed fire—to reduce fire hazard and enhance a variety of ecosystem values.
- Develop specific objectives for prescribed burning in the various vegetation types and outline the desired effects on vegetation, wildlife, soils, snags, fine fuels, and downed woody debris.
- Disclose the timing of prescribed burning and effects of spring and fall burning.

Use of Prescribed Fire

- Supportive of reintroducing fire in the ecosystem where it has historically played a key role in forest development and succession; urge the FS to employ or engage a fire ecologist from the eastern or SE portion of R6.
- Consider cumulative impacts of any pre-wildfire activities that may be proposed, including but not limited to fire line construction, helicopter landing zone construction, and road construction for fire-fighting purposes.
- Because fighting any fires in the PA are therefore a "reasonably foreseeable future action" that the agency will undertake, the FS must access the impacts of not only the Gotchen projects, but any future fire-fighting activities as well.

Fuelbreaks

- Design a Fuelbreak that leaves much of the large tree cover and remove most of the smaller trees
- Examine evaluations of new landscape-level fuel strategies, such as the defensible fuel profile zone, depicted in the Sierra Nevada Ecosystem Project.
- Make the Shaded Fuelbreaks as wide as economically feasible to ground skid: like 1000' per each side of the road.
- A 500' wide cleaned up fuelbreak will not even slow down a raging crown fire.
- Great threat of wildfire starts in that area is from lightning and not from people on those roads.
- Getting as much of the forest thinned from ladder fuels and made more resistant from stress is the best way to reduce the loss of the entire forest to a stand-replacing wildfire.
- The greatest fire danger risk element is the standing mortality and the density of standing timber and ladder fuels.
- The down wood increases the risk somewhat but may not justify its cost or removal in how much risk reduction it may provide.

MATURE, LATE SUCCESSIONAL AND OLD GROWTH HABITAT

- Late successional habitat risk reduction proposals, "… will prevent selected plantation within the LSR from growing into late successional stands, and will successionally set back existing spotted owl habitat…"
- Experiment with varied timber harvest prescriptions in the Matrix area to determine if the proposed thinning objectives are achievable, and how they will impact spotted owl habitat, snags, and fire behavior, while only harvesting small diameter trees (less than 10" dbh) within the LSR. This constitutes a "thinning from below" prescription (as planned for areas AA and BB).
- Mitigate any converted LSR habitat outside of spotted owl 0.7 mi circles by placing higher quality Matrix acreage into the LSR designation.
- Identify all old-growth stands in the EIS
- Drop all old-growth units from the timber sale proposal
- Develop at least one Action Alternative that avoids logging in old-growth
- Identify the age or range of ages of each stand proposed for treatment
- Identify the impacts of logging OG upon wildlife habitat, riparian health, and soil and water quality.
- What is the % of OG forest in the fifth-field watershed in which the Gotchen project is proposed?
- What is the definition of OG forest employed in the analysis?
- Scientifically demonstrate why the proposed range of activities is required to advance old growth features in the Gotchen LSR.
- The consequences of harvesting old growth timber in the matrix are not supported by the public or leading scientists and economists.
- It appears that the FS may harvest large diameter trees in the planning area simply to encourage ponderosa pine.
- We urge the FS to retain all late successional and old growth remnants and stands that may be located within the timber sale planning area.

- Concerned that regeneration harvest is proposed for LSR stands I,J,K and L. The FS has yet to show that regenerating vast amounts of mature forest will prevent such a disturbance or that late-successional habitat will result post-project.
- Old growth and LSR areas provide important foundations for beneficial wildlife habitat, riparian health, and soil quality. The scooping notice indicates that the PA is already degraded from past management project. We urge the FS to refrain from advancing the deterioration of the project area.
- There is overwhelming support for mature and old growth protections in SW Washington. References survey of 600 registered voters in WA and OR by David and Hibbitts, Feb 2002, attached document to letter. We urge the FS to heed the will of the constituents.

LSR

- Many or proposed actions fall outside the forestry guidelines for this classification.
- The disturbances to SO habitat do not appear to be justified.
- The program seems better suited to the adjacent Matrix.
- To achieve older stand character and function for the long-term, some short-term-habitat reduction is the best way to reach that goal.
- Will there be enough light and soil moisture to regenerate intolerant species under MFR and HFR?
- Leaving behind a heavier stand may not offer much for current wildlife usage and may provide too much shade for the next stand.
- The soils in the areas are quite thin and for the long-term buildup of organic matter it may be better not to remove so much of the down wood.

WILDLIFE HABITAT

Northern Spotted Owl

- Harvest of suitable habitat within spotted owl site centers will favor barred owl expansion with the PA. Treatments for Stand M-W will negatively affect spotted owl habitat. Proposed timber harvests within suitable habitat could destroy owl next sites, particularly in stand R. We recommend:
- No treatment in SO habitat within 0.7 mi of any Gotchen spotted owl site center.
- No harvest in Stands M& R.
- Revise the prescriptions to better protect SO habitat in units N-W, or drop altogether. They don’t meet biological justification required for LSR timber harvest
- Where thinning is necessary in the LSR, thin from below, only removing trees less than 10” dbh; and
- Provide an acreage accounting of the proposed stand treatments broken down by existing and proposed spotted owl habitat quality (nesting, foraging and dispersal), and proximity to existing spotted owl sites.
- Identify all known spotted owl centers in the Gotchen PA Indicate whether 100 acres of habitat has been identified, depict location of the habitat, and identify the age-class and habitat characteristics of the retained spotted owl habitat.

Critical Habitat

Examine:

- Conditions, amount and location of functional spotted owl habitat (specifically, unfragmented or interior forest habitat in Reserved land allocations adjacent to the CHU
- Impacts of historic and anticipated fragmentation of matrix lands
- Connectivity among interior forest blocks serving as owl habitat
- Reproductive success of owl in the matrix and LSR
- Disclose the role of CHU in meeting landscape objectives for connectivity; include CHU, within CHU, and between CHU and non-federal lands managed for owl habitat.

Mardon Skippers

Within mardon skipper habitat, we recommend the following protective measures:

- Prohibit equipment
- Prohibit slash piling
- Minimize foot traffic
- Minimize soil disturbance
- Conduct prescribed burns only in the autumn
- Learn more about fescue distribution
- Burn only small portions of mardon skipper habitat during any single year
- Directionally fell timber away from mardon skipper habitat.

Goshawks and pine marten

- We request that the Forest Service retain dwarf mistletoe clumps in late successional Matrix stands designated as A-G; goshawks spotted owls and northern flying squirrels use mistletoe clumps for nesting.
- Expanding road openings, as fuels breaks could be detrimental to pine marten in the planning area.

Survey and Manage

- Identify all S&M species and disclose known or suspected ranges and habitat types or veg communities associated with these species.
- Disclose the survey results for S&M species and protective measures.

Other "At Risk" Species

- Work in cooperation with WDF&W and/or USFWS to conduct surveys to identify Mardon skipper breeding habitat to determine presence/absence of the species.
- Request a map that depicts potential Mardon skipper habitat and presence/absence of the species.
- Include impacts to other threatened, endangered, candidate and sensitive species (numerous vascular and non-vascular plants, bats, amphibians, birds, mammals, mollusks and other invertebrates that likely occur in the Gotchen Planning Area.
- Identify all measures for protecting the above species and include the biological rationale for the protective measures and some quantifiable measure of the likelihood of success.

- Complete surveys for these species and the MIS prior to release of the EIS and disclose results and impacts in the EIS.
- What endangered, sensitive and rare species are found in the PA?
- Are there Federally listed as well as state listed species in the PA?
- What MIS are present in the areas, and what is their population and distribution through the forest?
- Are there any dispersal corridors in the PA?
- What will the impact be upon old growth-dependant ground mammals?
- When was the last document prepared that surveyed the spotted owl?
- How many NSO pairs and territorial owls are in the PA?
- Are there any ESUs located near or in the PA?
- Take a strong approach to protecting the mardon skipper populations in the PA, and avoid using Btk to control a natural outbreak of a native pathogen

Connectivity

- Develop an Action Alternative where Riparian Reserves, fragmented by road building and logging, provides connectivity through these sub-basins through upslope late-successional forest, and through removal of road barriers to stream connectivity.
- Retain large snags and wildlife trees sufficient to support 100% of cavity dwelling species with RR to meet connectivity objectives.
- Identify areas without sufficient snags to support 100% of cavity dwelling species and restore them.

Snag habitat and Cavity nesting birds

- Demonstrate that on any given 40 acre area in the Matrix where the timber sales is located that there are sufficient levels of large snags >17”dbh to support species of cavity-nesting birds at 40% and 100% of potential population levels, depending on species.
- Disclose how the 40% standards will be achieved within both the near-clearcut (LFT and MFR) and thinning units.
- For proposed units located adjacent to previously cut areas deficient in the required number of snags/wildlife tree, compensated for deficient habitat by increasing the number of snags/wildlife trees in the proposed unit.
- Determine the various life-history needs of various cavity excavators (see actual letter) such that snags, stand, and landscape management requirements for the species are met.
- Develop an Action Alternative that strives to maintain cavity-nesting birds at 100 % of their potential population level.

Fragmentation

Provide an Action Alternative that minimizes fragmentation of late-successional interior forest habitat.

Retention Areas

- Demonstrate that retention areas will include the largest, oldest trees, decadent or leaning trees, and hard snags (including the methods for ensuring these trees/snags are marked fore retention. If they don't include the aforementioned, explain why not possible.
- In stands less than 80 years of age, identify retention areas and retain for multiple rotations. Also, demonstrate the above, i.e. that retention areas include the largest, oldest, etc.

Fire refugia

- Fire refugia are minimally affected by successive fires due to topographical setting.
- Identify and locate and map FR w/in Gotchen.
- What criteria are being used to determine the logging prescription at the site-specific level?

Snags

- The minimum "seven snag per acre" as planned in treatments H and I and N through W, leave little room for error, Firewood cutting, wind throw, and inadvertent felling during harvesting can quickly reduce seven snags per acres to three or four (or fewer) per acre.
- Retain all snags that are not a safety hazard, and utilize snag modeling to determine the range or snag placement and numbers that result from implementing stand prescriptions and safety guidelines.
- Emphasize retention of larger snags (>20"dbh). The important size class is uncommon within the landscape.

Coarse Woody Debris

- Identify how CWD will be protected within logging units.
- Identify current CWD levels in cutting units.
- Disclose number of green trees needed in excess of number needed to meet NWFP standards for recruitment and 15% retention that will be retained for units deficient in CWD.
- Analyze current CWD levels across the Matrix.
- Where CWD levels are deficient, increase levels of retention in cutting units to improve distribution of CWD across the matrix.

AQUATICS, RIPARIAN RESERVES, ACS

Riparian Reserves

- Demonstrate that projects do not "retard or prevent attainment" of ACS objectives.
- Prepare and Action Alternative that provides a "no-harvest" Riparian Reserve on all aquatic features.

- Demonstrate that important biological and physical components, as described in ACS objectives, will be maintained and restored by proposed activities within Riparian Reserves.
- Provide rationale for activities in the RR in terms of controlling stocking, reestablishing and managing stands, and acquiring desired vegetation characteristics.
- Identify and quantify ecological costs (soil compaction, damage to remnant trees, etc) compared too quantifiable benefits.
- Identify in-stream flows needed too maintain riparian resources, channel conditions, and aquatic habitats.
- Demonstrate how efforts have been made to secure such flows.
- Identify number of road miles proposed for construction in the RR, is roads are proposed in the timber sale.
- Disclose the number of miles of road closed or decommed with RR.
- If new roads are proposed with RR, demonstrate attainment of ACS objectives for RR.
- Develop an Action Alternatives that provides a "no-harvest" buffer of one-site potential tree height around all wetlands, unstable, and potentially unstable areas.
- Manage areas within one-site potential tree height from all wetlands, unstable, and potentially unstable area in accordance with the ACS.
- Depict all wetlands and potentially unstable and unstable areas at a scale that permits direct comparison to other maps in the EIS.
- Disclosed the width, in feet, of the RR.
- Described criteria of classifying slopes as "unstable" and "potentially unstable

ACS

- Request that Gotchen projects meet the ACS objectives by maintaining existing conditions or implementing actions to restore conditions.
- Per the NWFP, the analysis must include a description of the existing conditions, the range of natural variability of the important physical and biological components of a given watershed, and how the proposed project or management actions maintains the existing conditions or moves it within the RNV.
- Utilize NMFS "Matrix of Pathways and Indicators" to display and evaluate aquatic conditions/impacts on the indicators or metrics provided in the NMFS paper and the NMFS matrix be disclosed in the EIS. If more biologically appropriate values are available and are applied, document justification for changes in the EIS. Develop an Action Alternative that retains 70% canopy closure in all logging units.

Watersheds and Riparian Areas

- Timber harvesting will contribute to sediment to the watershed and riparian zones.
- What streams, rivers, and/or creeks are in the planning area? When was the last time they were surveyed? What was the result of the survey?
- Does the timber sale propose creek crossings and harvest on steep slopes within riparian areas?
- What are the impacts upon individual riparian areas?
- Have all intermittent streams been included in Riparian Reserves?
- Have all unstable and potentially unstable areas been included in the RR?

- Are they meadows in the planning area? If so, where?
- Are there any 303(d) listed streams in the area? If so, what actions will be taken to reduce the impact of logging on these areas?
- Have seeps and springs been identified and mapped?
- How will the FS protect aquatic features in the proposed burning?
- What are the cumulative impacts upon the region as a whole?
- What are the mitigation actions designed to reduce the impacts upon the aquatic environment?

LIMITED OPERATING PERIODS

Identify periods of restricted operation for purposed of protecting wildlife and public resources for each species affected by the sale.

FISHERIES

- Identify all fisheries in the Gotchen PA and their status.
- Conduct surveys to determine if bull trout and other listed species are present with results presented in the EIS.
- Include impacts of the Gotchen timber sale on bull trout and other "at-risk" or listed species.

SOILS

- Include an Action Alternative that employs ground-based yarding in less than 25% of the units.
- Demonstrate how impacts to soil and litter organisms have been minimized through modified harvest methods.
- Disclose the number of units subject to ground-based yarding.
- Analyze short and long-term effects of prescribed burning on soils AND litter dwelling organisms.
- How much soil in the PA is compacted?
- What are the soil types in the PA? Are they especially susceptible to erosion and compaction?
- What mitigation measures will the FS utilize to curb adverse soil impacts?

ROAD MANAGEMENT

- We commend the FS for its proposal to decommission and close roads to meet its objectives of reducing fire risk and improve water quality and wildlife habitat.
- Provide an alt that closes roads and limits access to motorized vehicles permanently or, at minimum, temporarily when fire danger ratings are high.
- Educate the public on fire danger with roadside signs.
- Clearly described which system and nonsytesm roads are being considered for closure or decommissioning.
- Identify and target sub-basins with total road density >2/sq mile for decommissioning.

- Prioritize "high risk" roads for decommissioning—water runoff and sedimentation, road failure and wash out, and potential for triggering landslides—ahead of less hydrologically destructive roads.
- Classify roads in the Gotchen PA according to risk of damaging the aquatic environment; include criteria for rating "risk" level.
- Identify roads proposed for decomms that are in Riparian Reserves; on unstable slopes, across headwaters or headwalls, with a high number of stream crossings, and those built on side casting and other harmful engineering techniques.
- Described mitigation for temp roads constructed or maintained through wet winter months.
- Disclose how road closures/decomms will be prioritized and funded (because of poor record of follow through).
- Disclose post-project road density in the event the proposed road closures/decomms don't occur.
- What is the FS's success rate in closing roads? What report or study has been conducted to provide this info?
- Who will pay to close the roads, and with what funds?
- What methods will the new road be closed by?
- What report or document has analyzed this issues?
- How does road construction relate to the Forest's roads analysis process?
- The Fs has a poor record of road obliterations due to a lack of funds and directive. (See actual letter of several sale-related questions.)
- What would be the post-project road density if the planned closures did not occur? Does this density violate the NWFP or the GPFP?
- What is the percentage likelihood that the proposed sale will result in the closure of other roads, as these roads allowed the Service to access other timber sale areas?
- What is the current road density in the PA?
- What is the required road density per applicable laws?
- What will be the road density post-project? (See letter)
- Are the proposed road closures necessary in order to build new roads for the proposed timber sale?

ROADLESS AREAS

- Will roads be constructed in inventoried, uninventoried, or unroaded roadless areas?
- How is the FS proceeding with timber harvest in light of the new roadless area rule?
- We suggest that the Agency meet its objective of reducing spread from human conditions by closing FR8040 under conditions of high fire danger rather than utilizing mechanical fuel treatments.
- Avoid the Roadless Areas and focus your efforts elsewhere.
- Develop at least one action alternatives that avoids all activities in the roadless areas > 1000 acres.
- Identify all roadless areas > 1000 acres in size.
- Remove all portions of units within 1000+ acres roadless areas.
- Develop no new roads.

- Depict boundaries of 1000 + roadless areas and location of proposed units.

FOREST PLAN DIRECTION

- Some of the units in the Gotchen projects may be located in areas identified in the GP Forest Plan as administratively withdrawn to benefit martens, pileated woodpeckers and other late-successional species.
- Are there any units located in areas withdrawn by the 1990 Forest Plan for these species?
- If so, demonstrate that other land allocations, standards and guideline in the Gotchen Planning Area will meet management objectives for pileated woodpeckers and martens.
- If the above is not demonstrated, defer logging in the pileated woodpecker and/or pine marten administratively withdrawn areas.

Noxious Weeds

- Projects need to be implemented without worsening the noxious weed infestations.
- Map areas of infestation and areas free of pests to ensure weed-free areas are maintained.
- Reduce available seed source of noxious weeds by implementing a weed control plan in the surrounding areas before the project is implemented.
- Post signs to educate the public about weed problems and recruit volunteers to help pull weeds. Treat roadsides adjacent to the project areas and monitor infestations before, during and after the project is implemented.
- Exclude cattle from the project areas, as they will make the thinned areas more susceptible to weed invasions.
- Obliterate and/or close roads to reduce roadside weed introductions by motorized vehicles.
- What noxious weeds exist in the PA?
- Are they encroaching upon surrounding areas?
- What types of noxious weeds exist in those areas?
- Is there a management plan that addresses the spread and control of weeds?
- How would the planned sale impact the management strategy regarding noxious weeds?
- How will burning the PA and then logging it affect the into and spread or noxious weeds?
- What is being done to address the problem of noxious weeds?

GRAZING

- Concern that grazing may be introduced onto recently burned and harvested areas, or allowed to continue in the parts of the PA already open to grazing.
- How much of the sale area will be open to grazing after the burn and sale?
- What is the impact of grazing upon riparian areas and aquatic species within the PA?
- What is the impact of grazing on the spread of noxious weeds and how will the spread of such weeds be controlled?
- How will grazing effect reveg programs?
- What report or study analyzing the impacts of grazing have the FS completed?

LOGGING, LOGGING SYSTEMS, PAST HARVESTING

- Concern of proposed units (particularly LFR) being placed adjacent to existing clear cuts: What % of the planning areas is in an open condition?
- According to the GP Forest Plan, what percentage of the PA is allowed to be in an open condition at any time?
- What types of wildlife use clearcuts?
- What types of wildlife are impaired by clear cuts?
- What mitigation measures are being proposed for the sale?
- What sold-but-not-cut and recent sales (past 15 years) are located in the PA?
- We request maps of the planning areas showing the location of these past sales.
- Are any of these past sales experiencing adverse effects as a result of the sale?
- How has East TS affect the PA? Have all mit measures for this sale been completed?
- What, if any, resource damages occurred during the sale? Has the FS completed a post-project analysis of the East sale?
- Consider and require helicopter logging within the PA to minimize impacts of logging.
- Consider a restoration-only alternative that would forbear logging in sensitive areas.
- Due to fragile condition of the watershed at issue, a restoration-only alternative is possibly the *only* viable alt.

ECONOMICS

- FS has indicated that scheduled timber harvest is necessary to support local communities. What communities are affected by the sale?
- What people directly affected by the sale (loggers, truck drivers, etc.) live in the communities where the sale is taking place?
- From what sources do the communities derive their income?
- How much collected KV funds will be returned to the communities?
- How much will be returned to the US Treasury as required by the Act?
- Does the FS expect to lose money on the sale? How much money will the sale contribute to the FS coffers? How will these funds be appropriated? If below-cost, how will mitigation actions be undertaken? What will be the effect upon local communities?
- With passage of the Secure Rural Schools and Community Self-Development Act, and the results of the Socioeconomic Specialist Report, does the FS intend to continue to use assistance to rural communities as a justification for logging? How have these two developments changed the approach that the agency has taken to rural economies?
- Referenced letter to RIEC from NW economists that state mature and old growth forests are more valuable as standing timber than as a crop. Urge the FS to consider and implement the view of these experts.
- Harvesting an additional 10-20 TPA could make the sale much better financially.
- -Do you really need to chip or burn the tops and cull wood from the sale? Consider YUMing to the landing and making the material above what is needed for down logs and soils building available for firewood cutting. Would cost less and make the sale more economical.
- I hope these sales could not only pay for themselves but also generate revenue.

- An additional 10-15 TPS harvested could make a huge difference in the net return of the sale as well as not shading the next stand.
- I would like to see a minimum of new roads created to carry out this proposal, however it makes sense to get the most harvesting possible with the existing road net. These would be easy acres to log and make the sale more attractive.
- Hire some people and put them to work our economy and forest need it.
- Thin some areas that need it and clean round other areas, cut out the dead and dying trees before that is all that is left.

ENVIRONMENTAL ANALYSIS

- Mechanical treatments, such as thinning, fail to mimic the numerous ecological effects associated with fire, including effect like soil heating, nutrient cycling, and altering community composition to favor fire dependent species. In addition mechanical treatments can result in environmental damage. Request that FS examine these potential impacts and describe how they will be avoided:

    - Damage soil integrity, through increased erosion, compaction and loss of letter layer
    - Increased mortality of residual trees due to pathogens and mechanical damage to boles and roots;
    - Mobilization of sediment that may eventually be delivered to streams;
    - Increased levels of fine fuels and near-term hazard;
    - Dependence on roads;
    - Reduced habitat quality for sensitive species associated with cool, moist micro sites
    - Recommend that FS examine strategies that remove the clumps of small trees that serve as ladder fuels and leave the large over story trees. Consider study from Deschutes NF on CBD.
    - Consider impacts to aquatic systems employing the NMFS “matrix of pathways
    - Demonstrate clear attainment of the nine objectives of the ACS
    - Evaluates and provides for connectivity through the matrix
    - Evaluates and manages snag and down woody debris as multiple spatial scales
    - - Considers “effective” unit size

Cumulative Effects Analysis (CEA)

- Take a hard look at the CE of past logging and road building on aquatic and terrestrial ecosystems. Management activities that modify natural hydrologic process and degrade other wildlife habitat should be quantified and evaluated in the CEA.
- Modeling assumptions reflect current knowledge and understanding of ecological processes. For example, ARP should model non-forest areas as hydrologically immature, NOT hydrologically mature.
- Use models that consider impacts of roads to provide more accurate assessment of basin conditions (e.g. DHSVM model).

- Include a hard look at changes in peak flows and sediment delivery to streams associated with:
    - Road and landing const
    - Stream crossings by roads
    - Extensions of channel network by roads and road-side ditches
    - Erosion from side-case material
    - Interception of sub-surface flow
    - Incision of gullies
    - Enlargement of channels
    - Soil compaction,
    - Initiation of management related landslides and debris flows since mgt begin in the Gotchen PA.
- Demonstrate that less than 20% of the activity areas is or will be compacted, disturbed or displaced by transportation systems, landings, skid trails, skid roads, and other yarding systems.
- In conjunction with the effects of a single harvest, the effects of other harvests and management activities combine to impact the critical old growth habitat.
- The USFS should be heartily commended that they have not proposed to harvest as much timber this year as in prior years. We are still concerned about the magnitude of the effects as a result of the Gotchen projects, and urge the FS to use caution in such a large project.
- Identify the land allocations from the GP Land and Resource Mgt Plan and the allocations from the NWFP in which the Gotchen projects will occur.
- Indicate whether road building or logging activities are planned in the Riparian Reserves.
- Identify the land sub-basin in which each unit is located.
- Provide the following maps at a scale that permits direct comparison:
    - GPNF FP and NWFP allocations
    - Road and stream networks
    - Proposed roads
    - Cutting history
    - Fire history
    - Riparian Reserves
    - Unstable and potentially unstable areas
    - Aggregated retention areas

ACTION ALTERNATIVE CONSIDERATIONS

Present an Action Alternative that reflects public interest and the FS's commitment to conservation:

- Avoids harming or destroying old-growth forest
- Avoids logging and road building in uninventoried and inventoried RAs >1000 ac.
- Maintains aquatic conditions by retaining 70% canopy closure in logging units;
- Provides "no-harvest" Riparian Reserves around wetlands and unstable/potentially unstable areas and all other aquatic features
- Maintains landscape connectivity between Reserves and across the Matrix

- Provides snag habitat for 100% of the potential cavity nesting birds in the Matrix and RR
- Minimizes fragmentation
- Minimizes soil disturbance

FUTURE FIELD TRIPS AND PRESENTATIONS

- Express a strong interest in visiting the Gotchen PA to view the project on the ground with FS staff present. Suggest a series of field trips so that all parties have an adequate opportunity to address their concerns.
- Schedule a series of field trips to improve public understanding of the proposed projects

APPENDIX D

APPENDIX D NON-SIGNIFICANT ISSUES ADDRESSED IN THE GOTCHEN ANALYSIS

Issue: Wildlife association with legacy trees, snags, and down wood

Proposed activities that result in a loss or reduction of late-successional forest components such as legacy trees, snags and down wood could be detrimental to some wildlife species that are known or suspected to occur within the Gotchen Planning Area. Snag and down wood dependent species include resident and migratory birds, small mammals (including bats), terrestrial mollusks, and amphibians.

Measurement Methods:

Estimate of snags per acre throughout the Gotchen Planning Area by stand types

Coarse wood per acre throughout the Gotchen Planning Area by different stand types

Evaluate existing condition in context of 40% and 100% thresholds for cavity excavators.

Issue: Effects of machinery on soil compaction and site productivity

The proposed activities, including the use of ground-based equipment, prescribed fire and road reconstruction, could have negative effects on the soil resource. Past management activities have adversely affected soils within portions of the Gotchen Planning Area; in some areas exceeding the current GP Forest S&Gs that limit compaction to 20% or less of an area treated. The potential effects of the proposed activities on soil productivity and soil organisms could cause additional compaction, puddling, displacement, erosion, severe burning and loss of soil organic matter.

Measurement Methods:

Activity-area changes in % area with detrimental soil impacts such as: compaction, displacement and burning.

Issue: Changes in peak flows or water quality in streams draining the Gotchen Planning Area and in the White Salmon River

Forest cover throughout a substantial portion of the Gotchen Planning Area has been affected by past timber cutting and the exclusion of fire. In addition, road densities are high across the Gotchen Planning Area. The proposed activities of the Gotchen Risk Reduction and Restoration project would result in additional reductions in forest cover in treated areas, and in reduced or maintained road density levels. The combination of changes in forest cover and road density could affect snow accumulation and snowmelt in the area, and could affect routing of runoff through the watershed. At issue is how proposed changes in forest cover and road density combine with the effects of past harvest and roading activities to affect peak

flows and water quality in streams draining the Gotchen Planning Area, and in the White Salmon River.

Measurement Methods:

Acres of modified forest canopy

Degree of change in forest canopy

Final canopy closure of forest canopy

Changes in Road Density

Connectivity of Gotchen streams with the White Salmon River

Issue: Effects to Fish Habitat and Fish Populations

The mainstem of the White Salmon River is the only stream located within the Gotchen Planning Area known to be fish-bearing. The river contains rainbow trout *(Oncorhynchus mykiss)*, and eastern brook trout *(Salvelinus fontinalis)*. The White Salmon River also contains potential habitat for bull trout (*Salvelinus confluentus*), a federally listed Threatened species, and coastal cutthroat trout (*Oncorhynchus clarki*), a Forest Service Sensitive species, although neither of these species have been documented in the Upper White Salmon Watershed.

Fish populations could be affected if the implementation of this project affects the water quality (namely sediment and stream temperature) in fish-bearing streams in and downstream of the Gotchen Planning Area. Water quality may be altered if the prescribed harvest activities result in changes to streamside shade; peak or low stream flows; and/or increased sediment delivery to streams. When management activities change the hydrology of an area to such an extent that the sedimentation rate is increased above that which a stream has the capacity of transporting out of the system, the result is a loss in fish habitat quality. The decommissioning of roads, specifically culvert removal, is also a contributor of sediment to stream systems in the short term.

Measurement Methods:

Alterations in hydrologic regime resulting in changes to streamflows, stream temperatures, and sediment input into fish-bearing streams.

Amount, type, and proximity of tree removal to streams with above surface flow to the White Salmon River.

Number of culverts removed and resultant sediment input into fish-bearing streams.

Issue: Effects to the Mardon Skipper Butterfly

The mardon skipper is a non-migratory butterfly that inhabits grassy meadows and young tree plantations within the Gotchen Planning Area. The mardon skipper butterfly is a Washington State endangered species and a federal candidate species for listing under the

Endangered Species Act. Proposed treatments such as prescribed burning in plantations could cause mortality to the mardon skippers occupying the treated sites.

Measurement Methods:

Acres of "natural" meadows that are occupied by mardon skipper

Acres of occupied mardon skipper habitat that is affected by treatments (i.e. prescribed fire, precommercial thinning, etc.)

Issue: Effects of Stand Manipulation Activities to Improve Long-term Forest Health

Activities associated with the alternatives may affect the long-term health of the timber units, as well as the current levels of root diseases and insect populations, within the Gotchen Planning Area. Stand manipulation techniques proposed in the various action alternatives include density management of overstocked stands, even-aged and uneven-aged regeneration systems, and sanitation cutting. Other associated projects include the re-introduction of fire to provide planting spots for intolerant species and maintain a desired future stand structure and species composition.

Forest management activities, especially with ground-based equipment, have the potential to impact other resources (soil, wildlife, plants, etc.).

Measurement Methods:

Acres of treatment activity that accomplishes density management within the timber units.

Acres of treatment activity that increases the early seral component within the timber units.

Issue: Effects to Designated Wilderness, Inventoried Roadless Area, and Unroaded Areas

Proposed activities may have direct and indirect impacts on designated Wilderness and other lands with the potential for wilderness designation. Mt. Adams Wilderness lies to the north of the Gotchen Planning Area. No actions are proposed in the Mt. Adams Wilderness. Mt. Adams Wilderness is contiguous to the Gotchen Creek Inventoried Roadless Areas (delineated in GPNF Forest Plan and RARE II). Contiguous to the Gotchen Creek Inventoried Roadless Area is an unclassified unroaded area of approximately 1,190 acres. Vegetative and road management actions are proposed on the perimeter of Gotchen Creek Inventoried Roadless Area and the adjacent unclassified, unroaded area. These actions are assessed relative to their effect on recreation and wilderness capability. The values of these lands for wildlife and water quality are assessed under separate issues.

Measurement Methods:

Acres and type of vegetation treatment within the Inventoried Roadless Area and the unroaded areas

Miles of road constructed or decommissioned within roadless and unroaded areas.

Change in wilderness capability

Issue: Changes to Scenery

Proposed vegetation treatments may change the scenery along several routes used for recreation. This includes Road 80 and 82, principle routes leading to the South Climb Trailhead and Bird Creek Meadows (Yakama Nation), respectively. Scenery would also be altered along a number of lesser roads that double as cross-country ski trails in the winter. Scenic changes may also occur along summer trails such as the Morrison Creek Trail, Gotchen Creek Trail, and Cold Springs Trail.

Measurement Methods:

Percent of scenic road corridors in an open condition

Total area of treatments within scenic corridors

Total length of treatments along trails

Issue: Effects to Cultural Resources

Several prehistoric sites have been documented within the Gotchen Planning Area, as well as a number of historical sites relating to grazing. Historic sites include the Gotchen Creek Guard Station, which functioned as the headquarters for the Mt. Adams Ranger District from its construction in 1909 until 1916. The site was selected to allow the District Ranger to administer grazing activities. It is the oldest standing structure on the Gifford Pinchot National Forest. Removing any large trees within the two meadows surrounding the guard station could negatively affect the historical setting of the station. The potential effect of proposed activities on all of the known cultural resource sites would be assessed.

Measurement Methods:

Number of known prehistoric or historic site potentially affected

Issue: Air Quality

Under the action alternatives, air quality would be affected during the prescribed and pile burning operations. Smoke from the prescribed fire operations may potentially affect the class one airshed within the Mt Adams wilderness, reducing the visibility of Mt. Adams as viewed from the Trout Lake community as well as from other viewing areas within the forest. Projected fuel consumption and pollutant emissions rates vary by alternative and are widely affected based on fuel moistures, weather conditions, time of year and type of burn.

Measurement Methods

Particulate Matter (PM) less than 2.5 microns (PM2.5)

Particulate Matter (PM) less than 10 microns (PM10)

APPENDIX E

APPENDIX E – ALTERNATIVE DETAILS

Alternative B

Alternative B proposes to treat forest vegetation/fuels on approximately 1,684 acres within the Gotchen Planning Area using various silvicultural/fuels treatments. All logging activities would be with ground based systems. Approximately 7.4 miles of roads would be reconstructed.

The primary strategy of Alternative B is the creation of Shaded Fuelbreaks to reduce the threat of stand replacing fires from moving across the Gotchen landscape. In addition to the Shaded Fuelbreaks, some mature stands would be treated directly to reduce fuel loads and susceptibility to insects. Within the LSR, stands are targeted for treatment where they are severely degraded by the spruce budworm and in locations complimentary to the Shaded Fuelbreak system. The riparian reserves (Units L, V, Z, AA, and BB) are entered, except for a 25 foot no cut buffer. Within matrix ground, similar criteria is applied for identifying mature stands for treatment, though the proposed treatments are more intensive. Specifically, Alternative B involves:

Unit A

Current Condition:

Dominated by grand fir 80-100 years of age. Douglas-fir, western larch, and ponderosa pine in the same age group are at low numbers within the Unit.

Insect and disease mortality to grand fir is low/moderate. Annosus root disease is causing notable amounts of grand fir windthrow.

Past harvest (1980) within this Unit removed 50% of the large tree cover. Insects, disease, and windfall have further reduced the overstory canopy to 35%.

Unit A is primarily a single story, except for dense patches of saplings growing within landings and other small openings.

Not suitable owl habitat.

Proposed Treatment:

Regeneration Harvest (Light Forest Retention)**.** Within the matrix allocated lands, recently killed and declining grand fir and Douglas-fir would be removed. Fifteen percent overstory cover in aggregates and dispersed trees would be left as green tree retention. One acre or greater tree aggregates would be left uncut totaling 10.5% of the unit acreage. Total net acres treated = approximately 80 acres. Dispersed leave trees (10-15 trees/acre) would also be left uncut, including the largest and oldest trees in the Unit, with an emphasis of retaining ponderosa pine, Douglas-fir, and western larch. For volume of snags and down wood to be retained on site refer to the wildlife mitigation measures at the end of Chapter 2.

After harvest, the Unit would be site-prepared for tree planting/fuels reduction by grapple piling the logging slash and burning the piles. The objective is to establish a minimum of 538

planting spots per acre and well distributed over 90% of the area. Reforestation would be by hand planting. Planting would consist of ponderosa pine, Douglas-fir, and western larch on a 9 foot by 9 foot spacing. Control pocket gophers by grain baiting (Summer/early fall) for up to 3 years after hand planting conifers.

The 80 acres of plantations would be thinned (young stand thinning) in 11-20 years and would also have a planned underburn treatment in 21-30 years.

Units B, C, and D

Current Condition:

Dominated by grand fir 80-100 years of age. Douglas-fir, western larch, and ponderosa pine in the same age group are also present within the Unit. Ponderosa pine trees (150-250 years of age) are also present, but in low numbers.

Insect and disease mortality to grand fir is moderate/high. Top kill, due to spruce budworm, has occurred to the majority of the grand fir within these Units.

Unit is primarily a single story, except for dense patches of saplings growing within landings and other small openings resulting from a partial cut in 1980.

Suitable owl habitat.

Proposed Treatment:

Regeneration Harvest (Medium Forest Retention). Within the matrix allocated lands, recently killed and declining grand fir and Douglas-fir would be removed. Thirty percent overstory cover in aggregates and dispersed trees would be left as green tree retention, except Unit C would retain 40% canopy closure. One acre or less/greater aggregates would be left uncut totaling 10.5% of the unit area. Dispersed leave trees (20-35 trees/acre) would also be left uncut, including the largest and oldest trees in the Unit, with an emphasis of retaining ponderosa pine, Douglas-fir, and western larch. For volume of snags and down wood to be retained on site refer to the wildlife mitigation measures at the end of Chapter 2.

After harvesting the Unit would be site-prepared for tree planting/fuels reduction by grapple piling the logging slash and burning the piles. The objective is to establish a minimum of 300 planting spots per acre and well distributed over 90% of the area. Reforestation would be by hand planting. Planting would consist of ponderosa pine, Douglas-fir, and western larch on a 12 foot by 12 foot spacing. Control pocket gophers by grain baiting (Summer/early fall) for up to 3 years after hand planting conifers.

The 231 acres of “understory” plantations would be thinned (young stand thinning) in 11-20 years and would also have a planned underburn treatment in 21-30 years.

Unit E

Current Condition:

The Unit is a mix of species and age classes reflecting past partial harvest cuts. The overstory and understory is evenly mixed with Douglas-fir, grand fir, and ponderosa pine, with some

western larch and Oregon white oak. The Unit is tending toward an uneven aged tree distribution, with a few old growth ponderosa pines and numerous 80-year-old Douglas-fir and grand fir, and a mix of younger age groups in the 1 to 12 inch DBH size class.

Previous partial harvest cuts have opened the canopy enough to permit the establishment of notable quantities of ponderosa pine and western larch in the understory. Grand fir reproduction is more prevalent and without disturbance would create a dense understory.

Insect and disease mortality in the overstory is low.

Not suitable owl habitat.

Proposed Treatment:

Uneven age management. Within the matrix allocated lands, small and medium sized trees (8-21 inches), comprised of the poorest grand fir and Douglas-fir (dead tops, diseased/damaged) would be removed. Fifty percent overstory cover in aggregates and dispersed trees would be left as green tree retention. One acre and less aggregates would be left uncut totaling 10.5% of the unit area. Total net acres treated = approximately 48 acres. For volume of snags and down wood to be retained on site refer to the wildlife mitigation measures at the end of Chapter 2.

After harvesting the Unit, fuels would be reduced by grapple piling the logging slash and burning the piles. Natural seedling would provide additional seedlings over time.

The unit would receive another uneven age management cutting prescription in 11-20 years.

Unit F

Current Condition:

Dominated by grand fir 80-100 years of age. Douglas-fir, western larch, and ponderosa pine in the same age group are also present within the Unit. Ponderosa pine trees (150-250 years of age) are also present, but in low numbers.

Insect and disease mortality to the grand fir is moderate. Top kill, due to the spruce budworm, has occurred to the majority of the grand fir within the Unit.

Unit is primarily a single story, except for dense patches of saplings growing within landings and other small openings resulting from a partial cut in 1980.

Existing dispersal and foraging habitat for spotted owls is poor quality.

Proposed Treatment:

Regeneration Harvest (Heavy Forest Retention). Within the matrix allocated lands, recently killed and declining grand fir and Douglas-fir would be removed. Forty percent overstory cover would be left as green tree retention. One acre and less aggregates would be left uncut totaling 10.5% of the unit area. Total net treated acres = approximately 65 acres. For volume of snags and down wood to be retained on site refer to the wildlife mitigation measures at the end of Chapter 2.

After harvest, the Unit would be site-prepared for tree planting/fuels reduction by grapple piling the logging slash and burning the piles. The objective is to establish a minimum of 200

planting spots per acre and well distributed over 90% of the area. Reforestation would be by hand planting. Planting would consist of ponderosa pine, Douglas-fir, and western larch on a 15 foot by 15 foot spacing. Control pocket gophers by trapping (Summer/early fall) for up to 3 years after hand planting conifers.

The 65 acres of "understory" plantations would be thinned (young stand thinning) in 11-20 years and would also have a planned underburn treatment in 21-30 years.

Unit G

Current Condition:

Dominated by grand fir 80-100 years of age. Douglas-fir, western larch, and ponderosa pine in the same age group are also present within the Unit. Ponderosa pine trees (150-250 years of age) are also present, but in very low numbers.

Insect and disease mortality to the grand fir is low to moderate. Top kill, due to the spruce budworm, has occurred to the majority of the grand fir within the Unit.

Unit is primarily a single story, except for dense patches of saplings growing within landings and other small openings resulting from a partial cut in 1980.

Suitable owl habitat.

Proposed Treatment:

Sanitation Thinning. Within the matrix allocated lands, recently killed and declining grand fir and Douglas-fir would be removed. An overall average of fifty percent overstory cover would be left as green tree retention. One acre and less aggregates would be left uncut totaling 10.5% of the unit area. Total net treated acres = approximately 91 acres. The overstory canopy would be reduced to between 35% cover (pockets of dead/dying grand fir) to 65% cover (healthy Douglas-fir/ponderosa pine). Leave trees would include the largest and oldest trees in the Unit, with an emphasis of retaining ponderosa pine, Douglas-fir, and western larch. Dense sapling patches would be thinned to 100 trees per acre, with the emphasis of removing the grand fir. For volume of snags and down wood to be retained on site refer to the wildlife mitigation measures at the end of Chapter 2.

After harvesting the Unit, fuels would be reduced by grapple piling the logging slash and burning the piles.

The unit would receive another sanitation/thinning cutting prescription in 11-20 years.

Unit H

Current Condition:

Dominated by grand fir 80-100 years of age. Douglas-fir, western larch, and ponderosa pine in the same age group are also present within the Unit. Ponderosa pine trees (150-250 years of age) are also present, but in very low numbers.

Insect and disease mortality to grand fir is high, resulting in less than 45% live canopy cover.

Unit is primarily a single story, except for dense patches of saplings growing within landings and other small openings resulting from a partial cut in 1980.

Suitable owl habitat.

Proposed Treatment:

Fuels Reduction and Reforestation on approximately 44 acres. Dense sapling patches would be thinned to 100 trees per acre, with an emphasis of removing the grand fir. Maximum live tree diameter (dbh) cut limit is 6". Concentrated slash pockets and downed trees (1000 hour fuels) in excess of 12 tons per acre (2% cover) would be grapple piled and the piles would be burned. A subsequent underburn would further reduce the fine fuels to 3 tons per acre or less. Reforestation would be by hand planting. Planting would consist of ponderosa pine, Douglas-fir, and western larch on a 12 foot by 12 foot spacing. Control pocket gophers by trapping (Summer/early fall) for up to 3 years after hand planting conifers. For volume of snags and down wood to be retained on site refer to the wildlife mitigation measures at the end of Chapter 2.

The 44 acres of plantations would be thinned (young stand thinning) in 11-20 years and would also have a planned underburn treatment in 21-30 years.

Unit I

Current Condition:

Dominated by grand fir 80-100 years of age. Douglas-fir, western larch, and ponderosa pine in the same age group are also present within the Unit. Ponderosa pine trees (150-250 years of age) are also present, but in very low numbers.

Unit is primarily a single story, except for dense patches of saplings growing within landings and other small openings resulting from a partial cut in 1980.

Insect and disease mortality to grand fir ranges from light to high.

Canopy cover is presently at approximately 45%, but is expected to decline to below 40% within the next five years due to continued mortality from insects and armillaria and laminated root rots.

Suitable owl habitat, but declining.

Proposed Treatment:

Fuels Reduction and Reforestation. Within the late successional reserve allocated lands, approximately 20% of the Unit would remain uncut (portions with little/no mortality or portions with a greater preponderance of Douglas-fir and ponderosa pine. Total net treated acres = approximately 53 acres. Elsewhere, the overstory canopy would be reduced to approximately 35% (30 trees/acre) with the emphasis on retaining the Douglas-fir, ponderosa pine, western larch, and Englemann spruce tree component. Maximum live tree diameter (dbh) cut limit is 20". All grand fir (20" dbh and less) within 50 feet of an old-growth ponderosa pine would be removed. Within 250 feet of Road 8040020, logs/fuels in excess of 12 tons/acre (2% cover) would be grapple piled/burned and logs/fuels beyond 250 feet and in excess of 50 tons per acre (6% cover) would be grapple piled/burned. Merchantable logs would be removed prior to piling. A subsequent underburn would further reduce the fine

fuels to 3 tons per acre or less. Reforestation would be by hand planting. Planting would consist of ponderosa pine, Douglas-fir, and western larch on a 15 foot by 15 foot spacing. Control pocket gophers by trapping (Summer/early fall) for up to 3 years after hand planting conifers.

The 53 acres of "understory" plantations would be thinned (young stand thinning) in 11-20 years and would also have a planned underburn treatment in 21-30 years.

Units J, K, and L

Current Condition:

Dominated by grand fir 80-100 years of age. Douglas-fir, western larch, and ponderosa pine in the same age group are also present within the Unit. Ponderosa pine trees (150-250 years of age) are also present, but in very low numbers.

The Units are primarily a single story, except for dense patches of saplings growing within landings and other small openings resulting from a partial cut in 1980. In Units K and L, the overstory has been sufficiently opened to permit advanced conifer regeneration, mostly grand fir, throughout the Units.

Insect and disease mortality to the grand fir is moderate to high.

The canopy cover, within the Units, has declined to less than 40%.

Not suitable habitat.

Proposed Treatment:

Fuels Reduction and Reforestation. Logs/fuels in excess of 12 tons/acre (2% cover) would be grapple piled/burned. Unit L would have a 25 foot no cut buffer along each side of the ephermal stream. Total net treated acres = approximately 249 acres. The units would be underburned. Reforestation would be by hand planting. Planting would consist of ponderosa pine, Douglas-fir, and western larch on a 15 foot by 15 foot spacing. Control pocket gophers by trapping (Summer/early fall) for up to 3 years after hand planting conifers. For volume of snags and down wood to be retained on site refer to the wildlife mitigation measures at the end of Chapter 2.

The 249 acres of "understory" plantations would be thinned (young stand thinning) in 11-20 years and would also have a planned underburn treatment in 21-30 years.

Unit M

Current Condition:

Old growth Unit dominated with large ponderosa pine (200+ years) with Douglas-fir and grand fir in the younger age classes.

The understory layer of grand fir is composed of saplings to 20-inch diameter trees, which has been established with fire exclusion.

The grand fir defoliation is light with little mortality.

The Unit surrounds Road 8040 and 8040020 junction, which is a key location for fire suppression strategies.

Cherry Flats dispersed area campground (popular hunter camp in the fall) is within the Unit.

The unit is outside the _ mile circle of the spotted owl site.

Proposed Treatment:

Ponderosa Pine Understory Thin on approximately 68 acres. Within the late successional reserve allocated lands, 2/3's of the 6-20" dbh grand fir understory would be removed, especially underneath the ponderosa pine old-growth trees. Campsite screening at Cherry flats would be left uncut. The overstory cover would be retained at 60% canopy or greater. Logs/fuels in excess of 12 tons/acre (2% cover) would be grapple piled/burned. Merchantable logs would be removed prior to piling. For volume of snags and down wood to be retained on site refer to the wildlife mitigation measures at the end of Chapter 2.

Units N, O, P, Q, S, T, U, V, and W

Current Condition:

Dominated by grand fir 80-100 years of age. Douglas-fir, western larch, and ponderosa pine in the same age group are also present within the Unit. Ponderosa pine trees (150-250 years of age) are also present, but in very low numbers.

Near the Gotchen Creek Guard Station and eastward along Road 8200060, these Units have a higher component of lodgepole pine of various ages, which has created a dense, mid-level canopy layer.

Overall mortality within these Units is light.

Average canopy cover exceeds 50%.

Suitable habitat.

Proposed Treatment:

Shaded Fuelbreaks. Within the late successional reserve allocated lands (445 acres) and Matrix lands (30 acres), the tree would be thinned to a 40% tree canopy (except 50% in Unit Q for suitable owl habitat). Maximum live tree diameter (dbh) cut limit is 20". Unit V would not thin trees greater than 8"dbh and within 25' from the intermittent stream. Total net treated acres = approximately 475 acres. Leave trees would be pruned up to 10 feet or to a 40 percent green canopy. Leave tree preference would be Douglas-fir, ponderosa pine, western larch, and Englemann spruce, along with the largest diameter grand fir to meet the canopy cover. All intermediate grand fir trees (20" dbh and less), within 50 feet of old growth ponderosa pines, would be removed; the exception being Unit V where this treatment would not be done. Ladder fuels and brush would also be cut, except one – 1/100 acre clumps of understory, would be retained, if available. . Concentrated slash pockets and downed trees in excess of 12 tons per acre (2% cover) would be grappled piled and the piles burned. Merchantable logs would be removed prior to piling. For volume of snags and down logs to be retained on site refer to the wildlife mitigation measures at the end of Chapter 2.

The 476 acres of Shaded Fuelbreaks would be underburned in 6-10 years and 21-30 years.

Unit R

Current Condition:

These Units are young Units of planted and naturally seeded trees that were established following a regeneration-cut timber harvest. The age is uniform within the plantations and averages 30 years old. In most cases, plantations are primarily stocked with ponderosa pine; however, Douglas-fir, western larch, lodgepole pine, and grand fir are also present.

These two plantations had trees established at very high densities (400+ trees per acre) and have been pre-commercially thinned in the past to reduce stocking to 200-300 trees per acre.

Most of the plantations have low fuel loads. Logging slash was usually treated following the initial timber harvest

Proposed Treatment:

Plantation Maintenance on approximately 38 acres. Within the next five years, tree densities of two plantations, within the late successional reserve allocated lands, would be reduced to 100-200 trees per acre, retaining the largest ponderosa pine, Douglas-fir, and western larch trees. Leave tree spacing would be irregular due to leaving the largest trees of the desired species wherever they occur. Subsequent underburning would be implemented. Hand piles would be constructed around the unit's perimeter and burned prior to the interior underburn. A multi-year burning approach would be also implemented within plantations that contain mardon shipper habitat.

The 38 acres of plantations would be commercially thinned and underburned in 11-20 years.

Unit X

Current Condition:

Dense stand of lodgepole pine and grand fir, with lesser amounts of Douglas-fir and ponderosa pine. A range of ages and sizes are present.

Current canopy cover is 80-90%. The Unit provides owl dispersal habitat, but is not considered suitable habitat because the average tree diameter is not large enough.

The Unit contains little budworm activity due to the discontinuous arrangement of host species. There is a high potential for mountain pine beetle due to the high tree density of the lodgepole pine.

The Unit has a high potential for a crown fire due to the high stem density and crown closure.

Proposed Treatment:

Lodgepole Understory Thin. Within the late successional reserve allocated lands, the tree canopy would be reduced to 40% canopy cover by thinning the trees. Maximum live tree diameter (dbh) cut limit is 20". One to two acre aggregates would be left uncut totaling 10.5% of the unit acreage. Leave tree preference would be Douglas-fir and ponderosa pine. Total net treated acres = approximately 51 acres. Concentrated slash pockets and downed trees would be grappled piled and the piles would be burned. Merchantable logs would be removed prior to piling. For volume of snags and down logs to be retained on site refer to the wildlife mitigation measures at the end of Chapter 2.

Unit Y

Current Condition:

This Unit is comprised primarily with grand fir, 80-100 years of age, with lesser amounts of Douglas-fir and ponderosa pine of similar age. There are scattered ponderosa pine and Douglas-fir, which are approximately 150+ years of age.

The grand fir understory has not suffered much mortality from the insects and root rots. As a result, these trees are creating moisture and nutrient competition/stress on the older ponderosa pine trees.

The canopy cover is approximately 70% and the Unit was partially cut in the 1980's.

Down fuel load is approximately 10 tons (1-2% cover).

Proposed Treatment:

Legacy Tree Culturing. Within the late successional reserve allocated lands, half of the intermediate grand fir trees, within 50 feet of every other old-growth ponderosa pine, would be removed. Maximum live tree diameter (dbh) cut limit is 20". Total net treated acres = approximately 81 acres. Concentrations of slash would be handpiled.

Unit Z

Current Condition:

Grassy meadow dominated by fescue grasses.

Aspens are scattered around the perimeter and interior of the meadow in clumps of mature trees and other clonal patches of saplings.

Interspersed with the aspen are ponderosa pine and lodgepole pine, which have seeded into the meadow. The conifers are of a variety of sizes and ages up to 80 years old.

The Unit was partially cut in 1980's and the current budworm activity is light.

Downed fuel loading within the meadow is very light.

Proposed Treatment:

Aspen Restoration. Within the late successional reserve allocated lands, lodgepole pine and ponderosa pine that are 2 feet tall to 10 inches dbh, would be cut. A twenty-five foot buffer along each side of the streams, within Gotchen meadows, would not be treated. Total net treated acres = approximately 10 acres. Some slash would be pulled into the buffers to deter grazing. Elsewhere, concentrated slash pockets and downed trees would be hand piled and the piles would be burned. Trees with mechanical defect or root/butt decay and threaten to fall on the Gotchen Creek Guard Station would also be removed, slash piled, and burned.

Units AA and BB

Current Condition:

Dominated by grand fir 80-100 years of age. Douglas-fir, western larch, and ponderosa pine in the same age group are also present within the Unit. Ponderosa pine trees (150-250 years of age) are also present, but in very low numbers.

Unit is primarily a single story, except for dense patches of saplings growing within landings and other small openings resulting from a partial cut in 1980.

Sapling patches are very dense (500+ trees per acre) and primarily grand fir and Douglas-fir, with a few ponderosa pine and western larch.

Insect and disease mortality to the grand fir is considered moderate but varies greatly throughout the Units.

Proposed Treatment:

Gap Sapling Thinning on approximately 102 acres. Within the late successional reserve allocated lands, the tree density within existing, dense sapling patches (existing log landings and former created gaps only) would be thinned to 100 trees per acre. Maximum live tree diameter (dbh) cut limit is 6". Units AA and BB would not thin trees within 25' from the intermittent stream. Leave tree preference would be Douglas-fir, ponderosa pine, western larch, and Englemann spruce, along with grand fir to meet the tree spacing. Slash would be handpiled/burned.

ALTERNATIVE C – PREFERRED ALTERNATIVE

Alternative C proposes to treat forest vegetation/fuels on approximately 2,220 acres within the Gotchen Planning Area using various silvicultural/fuels treatments. All logging activities would be with ground based systems. Approximately 4.3 miles of roads would be reconstructed.

The primary strategy of Alternative C is to directly treat the hazardous fuels and help provide future resilience to the timber Units within the LSR and matrix. Within the LSR, many of the spruce budworm damaged Units would be treated by thinning the understory (10" dbh maximum cut limit) and snags, in excess of resource needs, would be felled and piled, along with the thinning slash. In addition, the alternative treats hazardous fuels between the Aikens lava bed, in the northern portion, and the matrix ground, in the southern portion, to help mitigate the threat of a large stand replacing fire moving from west to east or vise versa. A fuelbreak, along the 82 road, is also designed to break up the fuels concentration on the east side of the Gotchen Planning Area and connect the matrix ground to a thinning/fuels reduction Unit and the Yakama Indian Reservation. Riparian areas (Units L, Z, AA, BB, EE, and FF) are entered, except for a 25 foot no cut buffer. The exception is unit EE which contains two 170 foot no cut buffers. Within matrix ground, similar criteria is applied for identifying mature Units for treatment, though the proposed treatments are more intensive and are within the same units as identified in Alternative B. Specifically, the Alternative C involves:

Unit A

Current Condition:

Dominated by grand fir 80-100 years of age. Douglas-fir, western larch, and ponderosa pine in the same age group are at low numbers within the Unit.

Insect and disease mortality to grand fir is low/moderate. Annosus root disease is causing notable amounts of grand fir windthrow.

Past harvest (1980) within this Unit removed 50% of the large tree cover. Insects, disease, and windfall have further reduced the overstory canopy to 35%.

Unit is primarily a single story, except for dense patches of saplings growing within landings and other small openings.

Not suitable owl habitat.

Proposed Treatment:

Regeneration Harvest (Light Forest Retention). Within the matrix allocated lands, recently killed and declining grand fir and Douglas-fir would be removed. Fifteen percent overstory cover in aggregates and dispersed trees would be left as green tree retention. One acre or greater tree aggregates would be left uncut totaling 10.5% of the unit acreage. Total net acres treated = approximately 80 acres. Dispersed leave trees (10-15 trees/acre) would also be left uncut, including the largest and oldest trees in the Unit, with an emphasis of retaining

ponderosa pine, Douglas-fir, and western larch. For volume of snags and down logs to be retained on site refer to the wildlife mitigation measures at the end of Chapter 2.

After harvest, the Unit would be site-prepared for tree planting/fuels reduction by grapple piling the logging slash and burning the piles. The objective is to establish a minimum of 538 planting spots per acre and well distributed over 90% of the area. Reforestation would be by hand planting. Planting would consist of ponderosa pine, Douglas-fir, and western larch on a 9 foot by 9 foot spacing. Control pocket gophers by grain baiting (Summer/early fall) for up to 3 years after hand planting conifers.

The 80 acres of plantations would be thinned (young stand thinning) in 11-20 years and would also have a planned underburn treatment in 21-30 years.

Units B, C, and D

Current Condition:

Dominated by grand fir 80-100 years of age. Douglas-fir, western larch, and ponderosa pine in the same age group are also present within the Unit. Ponderosa pine trees (150-250 years of age) are also present, but in low numbers.

Insect and disease mortality to grand fir is moderate/high. Top kill, due to spruce budworm, has occurred to the majority of the grand fir within these Units.

Unit is primarily a single story, except for dense patches of saplings growing within landings and other small openings resulting from a partial cut in 1980.

Suitable owl habitat.

Proposed Treatment:

Regeneration Harvest (Medium Forest Retention). Within the matrix allocated lands, recently killed and declining grand fir and Douglas-fir would be removed. Thirty percent overstory cover in aggregates and dispersed trees would be left as green tree retention, except Unit C would retain 40% canopy closure. One acre or less/greater aggregates would be left uncut totaling 10.5% of the unit area. Dispersed leave trees (20-35 trees/acre) would also be left uncut, including the largest and oldest trees in the Unit, with an emphasis of retaining ponderosa pine, Douglas-fir, and western larch. For volume of snags and down logs to be retained on site refer to the wildlife mitigation measures at the end of Chapter 2.

After harvesting the Unit would be site-prepared for tree planting/fuels reduction by grapple piling the logging slash and burning the piles. The objective is to establish a minimum of 300 planting spots per acre and well distributed over 90% of the area. Reforestation would be by hand planting. Planting would consist of ponderosa pine, Douglas-fir, and western larch on a 12 foot by 12 foot spacing. Control pocket gophers by grain baiting (Summer/early fall) for up to 3 years after hand planting conifers.

The 231 acres of “understory” plantations would be thinned (young stand thinning) in 11-20 years and would also have a planned underburn treatment in 21-30 years.

Unit E

Current Condition:

The Unit is a mix of species and age classes reflecting past partial harvest cuts. The overstory and understory is evenly mixed with Douglas-fir, grand fir, and ponderosa pine, with some western larch and Oregon white oak. The Unit is tending toward an uneven aged tree distribution, with a few old growth ponderosa pines and numerous 80-year-old Douglas-fir and grand fir, and a mix of younger age groups in the 1 to 12 inch DBH size class.

Previous partial harvest cuts have opened the canopy enough to permit the establishment of notable quantities of ponderosa pine and western larch in the understory. Grand fir reproduction is more prevalent and without disturbance would create a dense understory.

Insect and disease mortality in the overstory is low.

Not suitable owl habitat.

Proposed Treatment:

Uneven age management. Within the matrix allocated lands, small and medium sized trees (8-21 inches), comprised of the poorest grand fir and Douglas-fir (dead tops, diseased/damaged) would be removed. Fifty percent overstory cover in aggregates and dispersed trees would be left as green tree retention. One acre and less aggregates would be left uncut totaling 10.5% of the unit area. Total net acres treated = approximately 48 acres. For volume of snags and down logs to be retained on site refer to the wildlife mitigation measures at the end of Chapter 2.

After harvesting the Unit, fuels would be reduced by grapple piling the logging slash and burning the piles. Natural seedling would provide additional seedlings over time.

The unit would receive another uneven age management cutting prescription in 11-20 years.

Unit F

Current Condition:

Dominated by grand fir 80-100 years of age. Douglas-fir, western larch, and ponderosa pine in the same age group are also present within the Unit. Ponderosa pine trees (150-250 years of age) are also present, but in low numbers.

Insect and disease mortality to the grand fir is moderate. Top kill, due to the spruce budworm, has occurred to the majority of the grand fir within the Unit.

Unit is primarily a single story, except for dense patches of saplings growing within landings and other small openings resulting from a partial cut in 1980.

Existing dispersal and foraging habitat for spotted owls is poor quality.

Proposed Treatment:

Regeneration Harvest (Heavy Forest Retention). Within the matrix allocated lands, recently killed and declining grand fir and Douglas-fir would be removed. Forty percent overstory cover would be left as green tree retention. One acre and less aggregates would be left uncut totaling 10.5% of the unit area. Total net treated acres = approximately 65 acres. For volume

of snags and down logs to be retained on site refer to the wildlife mitigation measures at the end of Chapter 2.

After harvest, the Unit would be site-prepared for tree planting/fuels reduction by grapple piling the logging slash and burning the piles. The objective is to establish a minimum of 200 planting spots per acre and well distributed over 90% of the area. Reforestation would be by hand planting. Planting would consist of ponderosa pine, Douglas-fir, and western larch on a 15 foot by 15 foot spacing. Control pocket gophers by trapping (Summer/early fall) for up to 3 years after hand planting conifers.

The 65 acres of "understory" plantations would be thinned (young stand thinning) in 11-20 years and would also have a planned underburn treatment in 21-30 years.

Unit G

Current Condition:

Dominated by grand fir 80-100 years of age. Douglas-fir, western larch, and ponderosa pine in the same age group are also present within the Unit. Ponderosa pine trees (150-250 years of age) are also present, but in very low numbers.

Insect and disease mortality to the grand fir is low to moderate. Top kill, due to the spruce budworm, has occurred to the majority of the grand fir within the Unit.

Unit is primarily a single story, except for dense patches of saplings growing within landings and other small openings resulting from a partial cut in 1980.

Suitable owl habitat.

Proposed Treatment:

Sanitation Thinning. Within the matrix allocated lands, recently killed and declining grand fir and Douglas-fir would be removed. An overall average of fifty percent overstory cover would be left as green tree retention. One acre and less aggregates would be left uncut totaling 10.5% of the unit area. Total net treated acres = approximately 91 acres. The overstory canopy would be reduced to between 35% cover (pockets of dead/dying grand fir) to 65% cover (healthy Douglas-fir/ponderosa pine). Leave trees would include the largest and oldest trees in the Unit, with an emphasis of retaining ponderosa pine, Douglas-fir, and western larch. Dense sapling patches would be thinned to 100 trees per acre, with the emphasis of removing the grand fir. For volume of snags and down logs to be retained on site refer to the wildlife mitigation measures at the end of Chapter 2.

After harvesting the Unit, fuels would be reduced by grapple piling the logging slash and burning the piles.

The unit would receive another sanitation/thinning cutting prescription in 11-20 years.

Unit H

Current Condition:

Dominated by grand fir 80-100 years of age. Douglas-fir, western larch, and ponderosa pine in the same age group are also present within the Unit. Ponderosa pine trees (150-250 years of age) are also present, but in very low numbers.

Insect and disease mortality to grand fir is high, resulting in less than 45% live canopy cover.

Unit is primarily a single story, except for dense patches of saplings growing within landings and other small openings resulting from a partial cut in 1980.

Suitable owl habitat.

Proposed Treatment:

Fuels Reduction and Reforestation. One acre and less aggregates would be left uncut totaling 10.5% of the unit area. Total net treated acres = approximately 39 acres. The understory would be thinned on a 18 to 20 foot tree spacing, with an emphasis of removing the grand fir. Maximum live tree diameter (dbh) cut limit is 10". Concentrated slash pockets and downed trees (1000 hour fuels) in excess of 12 tons per acre (2% cover) would be grapple piled and the piles would be burned. A subsequent underburn would further reduce the fine fuels to 3 tons per acre or less. Reforestation would be by hand planting. Planting would consist of ponderosa pine, Douglas-fir, and western larch on a 12 foot by 12 foot spacing. Control pocket gophers by trapping (Summer/early fall) for up to 3 years after hand planting conifers. For volume of snags and down logs to be retained on site refer to the wildlife mitigation measures at the end of Chapter 2.

The 39 acres of plantations would be thinned (young stand thinning) in 11-20 years and would also have a planned underburn treatment in 21-30 years.

Unit I

Current Condition:

Dominated by grand fir 80-100 years of age. Douglas-fir, western larch, and ponderosa pine in the same age group are also present within the Unit. Ponderosa pine trees (150-250 years of age) are also present, but in very low numbers.

Unit is primarily a single story, except for dense patches of saplings growing within landings and other small openings resulting from a partial cut in 1980.

Insect and disease mortality to grand fir ranges from light to high.

Canopy cover is presently at approximately 45%, but is expected to decline to below 40% within the next five years due to continued mortality from insects and armillaria and laminated root rots.

Suitable owl habitat, but declining.

Proposed Treatment:

Fuels Reduction and Reforestation. Within the late successional reserve allocated lands, the overstory canopy would be reduced to approximately 35% (approximately 30 trees/acre) with the emphasis on retaining the Douglas-fir, ponderosa pine, western larch, and Englemann spruce tree component. One acre and less aggregates would be left uncut totaling 10.5% of the unit area. Total net treated acres = approximately 53 acres. The understory would be

thinned on an 18 to 20 foot tree spacing, with an emphasis of removing the grand fir. Maximum live tree diameter (dbh) cut limit is 10". The cutting prescription would produce "gaps: < 2 acres/each to assist in the reforestation success of early seral species. All grand fir (10" dbh and less) within 50 feet of an old-growth ponderosa pine would be removed. Within 250 feet of Road 8040020, logs/fuels in excess of 12 tons/acre (2% cover) would be grapple piled/burned and logs/fuels beyond 250 feet and in excess of 50 tons per acre (6% cover) would be grapple piled/burned. Merchantable logs would be removed prior to piling. A subsequent underburn would further reduce the fine fuels to 3 tons per acre or less. Reforestation would be by hand planting. Planting would consist of ponderosa pine, Douglas-fir, and western larch on a 15 foot by 15 foot spacing. Control pocket gophers by trapping (Summer/early fall) for up to 3 years after hand planting conifers. For volume of snags and down logs to be retained on site refer to the wildlife mitigation measures at the end of Chapter 2.

The 53 acres of "understory" plantations would be thinned (young stand thinning) in 11-20 years and would also have a planned underburn treatment in 21-30 years.

Units J, K, and L

Current Condition:

Dominated by grand fir 80-100 years of age. Douglas-fir, western larch, and ponderosa pine in the same age group are also present within the Unit. Ponderosa pine trees (150-250 years of age) are also present, but in very low numbers.

The Units are primarily a single story, except for dense patches of saplings growing within landings and other small openings resulting from a partial cut in 1980. In Units K and L, the overstory has been sufficiently opened to permit advanced conifer regeneration, mostly grand fir, throughout the Units.

Insect and disease mortality to the grand fir is moderate to high.

The canopy cover, within the Units, has declined to less than 40%.

Not suitable habitat.

Proposed Treatment:

Fuels Reduction and Regeneration. One acre and less aggregates would be left uncut totaling 10.5% of the unit area. Total net treated acres = approximately 243 acres. The understory would be thinned on an 18 to 20 foot tree spacing, with an emphasis of removing the grand fir. Maximum live tree diameter (dbh) cut limit is 10". Unit L would have a 25 foot no cut buffer along each side of the ephermal stream. Logs/fuels in excess of 12 tons/acre would be grapple piled/burned. The remainder of the unit would be underburned. Reforestation would be by hand planting. Planting would consist of ponderosa pine, Douglas-fir, and western larch on a 15 foot by 15 foot spacing. Control pocket gophers by trapping (Summer/early fall) for up to 3 years after hand planting conifers. For volume of snags and down logs to be retained on site refer to the wildlife mitigation measures at the end of Chapter 2.

The 243 acres of "understory" plantations would be thinned (young stand thinning) in 11-20 years and would also have a planned underburn treatment in 21-30 years.

Unit M

Current Condition:

Old growth Unit dominated with large ponderosa pine (200+ years) with Douglas-fir and grand fir in the younger age classes.

The understory layer of grand fir is composed of saplings to 20-inch diameter trees, which has been established with fire exclusion.

The grand fir defoliation is light with little mortality.

The Unit surrounds Road 8040 and 8040020 junction, which is a key location for fire suppression strategies.

Cherry Flats dispersed area campground (popular hunter camp in the fall) is within the Unit.

Proposed Treatment:

Ponderosa Pine Understory Thin. Within the late successional reserve allocated lands, 2/3's of the 6-20" dbh grand fir understory would be removed, especially underneath the ponderosa pine old-growth trees. One acre and less aggregates would be left uncut totaling 10.5% of the unit area. Total net treated acres = approximately 61 acres. Campsite screening at Cherry flats would be left uncut. The overstory cover would be retained at 60% canopy or greater. Merchantable logs would be removed prior to piling. For volume of snags and down logs to be retained on site refer to the wildlife mitigation measures at the end of Chapter 2.

Units S

Current Condition:

Dense stand of lodgepole pine and grand fir, with lesser amounts of Douglas-fir and ponderosa pine. A range of ages and sizes are present.

Current canopy cover is 80-90%. The Unit provides owl dispersal habitat, but is not considered suitable habitat because the average tree diameter is not large enough.

The Unit contains little budworm activity due to the discontinuous arrangement of host species. There is a high potential for mountain pine beetle due to the high tree density of the lodgepole pine.

The Unit has a high potential for a crown fire due to the high stem density and crown closure.

Proposed Treatment:

Shaded Fuelbreaks. Within the late successional reserve allocated lands (144 acres) and Matrix lands (1 acre), the trees would be thinned to a 40% tree canopy. Maximum live tree diameter (dbh) cut limit is 10". Leave trees would be pruned up to 10 feet or to a 40 percent green canopy. Leave tree preference would be Douglas-fir, ponderosa pine, western larch, and Englemann spruce, along with the largest diameter grand fir to meet the canopy cover. All intermediate grand fir trees (10" dbh and less), within 50 feet of old growth ponderosa pines, would be removed. Ladder fuels and brush would also be cut, except one – 1/100 acre clumps of understory, would be retained, if available. Concentrated slash pockets and

downed trees in excess of 15 tons per acre (2% cover) would be grappled piled, burned and/or chipped and removed. Merchantable logs would be removed prior to piling.

The 145 acres of Shaded Fuelbreaks would be underburned in 6-10 years and 21-30 years.

Units EE, and FF

Current Condition:

Dominated by grand fir 80-100 years of age. Douglas-fir, western larch, and ponderosa pine in the same age group are also present within the Unit. Ponderosa pine trees (150-250 years of age) are also present, but in very low numbers.

Near the Gotchen Creek Guard Station and eastward along Road 8200060, these Units have a higher component of lodgepole pine of various ages, which has created a dense, mid-level canopy layer.

Overall mortality within these Units is light.

Average canopy cover exceeds 50%.

Suitable habitat.

Proposed Treatment:

Fuelbreaks. The trees would be thinned. Maximum live tree diameter (dbh) cut limit is 10". Leave trees would be pruned up to 10 feet or to a 40 percent green canopy. Leave tree preference would be Douglas-fir, ponderosa pine, western larch, and Englemann spruce, along with the largest diameter grand fir to meet the canopy cover. Aspen trees would not be cut. All intermediate grand fir trees (10" dbh cut limit), within 50 feet of old growth ponderosa pines, would be removed. Ladder fuels and brush would also be cut, except one – 1/100-acre clumps of understory, would be retained, if available. Units EE would have 170 foot no cut buffers along each side of the streams and FF would have a 25 foot no cut buffer. Total net treated acres = approximately 173 acres. For volume of snags and down logs to be retained on site refer to the wildlife mitigation measures at the end of Chapter 2.

The 173 acres of fuelbreaks would be underburned in 6-10 years and 21-30 years.

Unit R

Current Condition:

These Units are young stands of planted and naturally seeded trees that were established following a regeneration-cut timber harvest. The age is uniform within the plantations and averages 30 years old. In most cases, plantations are primarily stocked with ponderosa pine; however, Douglas-fir, western larch, lodgepole pine, and grand fir are also present.

These two plantations had trees established at very high densities (400+ trees per acre) and have been pre-commercially thinned in the past to reduce stocking to 200-300 trees per acre.

Most of the plantations have low fuel loads. Logging slash was usually treated following the initial timber harvest.

Proposed Treatment:

Plantation Maintenance on approximately 38 acres. Within the next five years, tree densities of two plantations, within the late successional reserve allocated lands, would be reduced to 100-200 trees per acre, retaining the largest ponderosa pine, Douglas-fir, and western larch trees. Leave tree spacing would be irregular due to leaving the largest trees of the desired species wherever they occur. Subsequent underburning would be implemented. Hand piles would be constructed around the unit's perimeter and burned prior to the interior underburn. A multi-year burning approach would be also implemented within plantations that contain mardon shipper habitat.

The 38 acres of plantations would be commercially thinned and underburned in 11-20 years.

Unit X

Current Condition:

Dense stand of lodgepole pine and grand fir, with lesser amounts of Douglas-fir and ponderosa pine. A range of ages and sizes are present.

Current canopy cover is 80-90%. The Unit provides owl dispersal habitat, but is not considered suitable habitat because the average tree diameter is not large enough.

The Unit contains little budworm activity due to the discontinuous arrangement of host species. There is a high potential for mountain pine beetle due to the high tree density of the lodgepole pine.

The Unit has a high potential for a crown fire due to the high stem density and crown closure.

Proposed Treatment:

Lodgepole Understory Thin. Within the late successional reserve allocated lands, the tree canopy would be reduced to 40% canopy cover by thinning the trees. Maximum live tree diameter (dbh) cut limit is 20". One to two acre aggregates would be left uncut totaling 10.5% of the unit acreage. Leave tree preference would be Douglas-fir and ponderosa pine. Total net treated acres = approximately 51 acres. Merchantable logs would be removed prior to piling. For volume of snags and down logs to be retained on site refer to the wildlife mitigation measures at the end of Chapter 2.

Unit Y

Current Condition:

This Unit is comprised primarily with grand fir, 80-100 years of age, with lesser amounts of Douglas-fir and ponderosa pine of similar age. There are scattered ponderosa pine and Douglas-fir, which are approximately 150+ years of age.

The grand fir understory has not suffered much mortality from the insects and root rots. As a result, these trees are creating moisture and nutrient competition/stress on the older ponderosa pine trees.

The canopy cover is approximately 70% and the Unit was partially cut in the 1980's.

Down fuel load is approximately 10 tons (1-2% cover).

Proposed Treatment:

Legacy Tree Culturing/Understory Thin. Within the late successional reserve allocated lands, the intermediate grand fir trees (10" dbh cut limit), within 50 feet of an old-growth ponderosa pine, would be removed. One acre and less aggregates would be left uncut totaling 10.5% of the unit area. Total net treated acres = approximately 251 acres. Elsewhere, the understory would be thinned on a 18 to 20 foot tree spacing, with an emphasis of removing the grand fir. Maximum live tree diameter (dbh) cut limit is 10". Concentrations of slash would be grapple piled and burned. For volume of snags and down logs to be retained on site refer to the wildlife mitigation measures at the end of Chapter 2.

Unit Z

Current Condition:

Grassy meadow dominated by fescue grasses.

Aspens are scattered around the perimeter and interior of the meadow in clumps of mature trees and other clonal patches of saplings.

Interspersed with the aspen are ponderosa pine and lodgepole pine, which have seeded into the meadow. The conifers are of a variety of sizes and ages up to 80 years old.

The Unit was partially cut in 1980's and the current budworm activity is light.

Downed fuel loading within the meadow is very light.

Proposed Treatment:

Aspen Restoration. Within the late successional reserve allocated lands, lodgepole pine and ponderosa pine that are 2 feet tall to 10 inches dbh, would be cut. A twenty-five foot buffer along each side of the streams, within Gotchen meadows, would not be treated. Total net treated acres = approximately 10 acres. Some slash would be pulled into the riparian buffer to deter grazing. Elsewhere, concentrated slash pockets and downed trees would be hand piled and the piles would be burned. (Refer to Mitigation Measure W14, FEIS, page 61.) Trees with mechanical defect or root/butt decay and threaten to fall on the Gotchen Creek Guard Station would also be removed, slash piled, and burned. Construct a cattle exclosure around the perimeter of the Gotchen Meadow (minimum of 10 acres) to encourage aspen regeneration and to protect mardon skipper habitat. The fence would be designed to protect the historic character of Gotchen Creek Guard Station. (Refer to Mitigation Measure T-11, FEIS page 80.)

Unit AA

Current Condition:

Dominated by grand fir 80-100 years of age. Douglas-fir, western larch, and ponderosa pine in the same age group are also present within the Unit. Ponderosa pine trees (150-250 years of age) are also present, but in very low numbers.

Unit is primarily a single story, except for dense patches of saplings growing within landings and other small openings resulting from a partial cut in 1980.

Sapling patches are very dense (500+ trees per acre) and primarily grand fir and Douglas-fir, with a few ponderosa pine and western larch.

Insect and disease mortality to the grand fir is considered moderate but varies greatly throughout the Units.

Proposed Treatment:

Understory Density Reduction. Within the late successional reserve allocated lands, the understory would be thinned on an 18 to 20 foot tree spacing, with an emphasis of removing the grand fir. Maximum live tree diameter (dbh) cut limit is 10". Unit AA would have a 25 foot no cut buffer along each side of the stream. Fifteen percent of the acreage would be retained in untreated, 1-10 acre areas. Net acres to be treated = approximately 485 acres. Leave tree preference would be Douglas-fir, ponderosa pine, western larch, and Englemann spruce, along with grand fir to meet the tree spacing. Down wood (16" diameter at the large end, 16 feet long, and in the decay class 1 or 2) would be retained at a minimum of 2% cover. Slash would be grapple piled/burned. One pile per acre would be retained for wildlife needs.

Unit BB

Current Condition:

Dominated by grand fir 80-100 years of age. Douglas-fir, western larch, and ponderosa pine in the same age group are also present within the Unit. Ponderosa pine trees (150-250 years of age) are also present, but in very low numbers.

Unit is primarily a single story, except for dense patches of saplings growing within landings and other small openings resulting from a partial cut in 1980.

Sapling patches are very dense (500+ trees per acre) and primarily grand fir and Douglas-fir, with a few ponderosa pine and western larch.

Insect and disease mortality to the grand fir is considered moderate but varies greatly throughout the Units.

Proposed Treatment:

Gap Sapling Thinning. Within the late successional reserve allocated lands, the tree density within existing, dense sapling patches (existing log landings and former created gaps only) would be thinned to 100 trees per acre. Maximum live tree diameter (dbh) cut limit is 6". Unit BB would have a 25 foot no cut buffer along each side of the stream. Net treatment acres = approximately 30 acres. Leave tree preference would be Douglas-fir, ponderosa pine, western larch, and Englemann spruce, along with grand fir to meet the tree spacing. Slash would be handpiled/burned.

Unit CC

Current Condition:

Dominated by grand fir 80-100 years of age. Douglas-fir, western larch, and ponderosa pine in the same age group are also present within the Unit. Ponderosa pine trees (150-250 years of age) are also present, but in very low numbers.

Unit is primarily a single story, except for dense patches of saplings growing within landings and other small openings resulting from a partial cut in 1980.

Sapling patches are very dense (500+ trees per acre) and primarily grand fir and Douglas-fir, with a few ponderosa pine and western larch.

Insect and disease mortality to the grand fir is considered moderate but varies greatly throughout the Units.

Proposed Treatment:

Understory Density Reduction. Within the late successional reserve allocated lands, the understory would be thinned on a 18 to 20 foot tree spacing, with an emphasis of removing the grand fir. Maximum live tree diameter (dbh) cut limit is 10". Fifteen percent of the acreage would be retained in untreated, 1-10 acre areas. Net acres to be treated = approximately 250 acres. Leave tree preference would be Douglas-fir, ponderosa pine, western larch, and Englemann spruce, along with grand fir to meet the tree spacing. Down wood (16" diameter at the large end, 16 feet long, and in the decay class 1 or 2) would be retained at a minimum of 2% cover. Slash would be grapple piled/burned. One pile per acre would be retained for wildlife needs.

Unit DD

Current Condition:

Dominated by grand fir 80-100 years of age. Douglas-fir, western larch, and ponderosa pine in the same age group are also present within the Unit. Ponderosa pine trees (150-250 years of age) are also present, but in very low numbers.

Unit is primarily a single story, except for dense patches of saplings growing within landings and other small openings resulting from a partial cut in 1980.

Sapling patches are very dense (500+ trees per acre) and primarily grand fir and Douglas-fir, with a few ponderosa pine and western larch.

Insect and disease mortality to the grand fir is considered moderate but varies greatly throughout the Units.

Proposed Treatment:

Understory Density Reduction. Within the late successional reserve allocated lands, the understory would be thinned on a 18 to 20 foot tree spacing, with an emphasis of removing the grand fir. Maximum live tree diameter (dbh) cut limit is 10". Fifteen percent of the acreage would be retained in untreated, 1-10 acre areas. Net acres to be treated = approximately 21 acres. Leave tree preference would be Douglas-fir, ponderosa pine, western larch, and Englemann spruce, along with grand fir to meet the tree spacing. Down wood (16" diameter at the large end, 16 feet long, and in the decay class 1 or 2) would be retained at a minimum of 2% cover. Slash would be grapple piled/burned. One pile per acre would be retained for wildlife needs.

ALTERNATIVE D

Alternative D proposes to treat forest vegetation/fuels on approximately 1,645 acres within the Gotchen Planning Area using various silvicultural/fuels treatments. All logging activities would be with ground based systems. Approximately 4.1 miles of roads would be reconstructed.

The primary strategy of Alternative D is the same as Alternative B, except the suitable owl habitat, within the LSR, is left undisturbed by restricting green tree removal within the Shaded Fuelbreaks to 10" dbh or less. In addition, Unit V (Shaded Fuelbreak Riparian) is dropped. The riparian areas (Units L, Z, AA, and BB) are buffered the same as Alternative B with a 25 foot no cut strip. The matrix ground remains the same as Alternative B. Specifically, the alternative involves:

Unit A

Current Condition:

Dominated by grand fir 80-100 years of age. Douglas-fir, western larch, and ponderosa pine in the same age group are at low numbers within the Unit.

Insect and disease mortality to grand fir is low/moderate. Annosus root disease is causing notable amounts of grand fir windthrow.

Past harvest (1980) within this Unit removed 50% of the large tree cover. Insects, disease, and windfall have further reduced the overstory canopy to 35%.

Unit is primarily a single story, except for dense patches of saplings growing within landings and other small openings.

Not suitable owl habitat.

Proposed Treatment:

Regeneration Harvest (Light Forest Retention). Within the matrix allocated lands, recently killed and declining grand fir and Douglas-fir would be removed. Fifteen percent overstory cover in aggregates and dispersed trees would be left as green tree retention. One acre or greater tree aggregates would be left uncut totaling 10.5% of the unit acreage. Total net acres treated = approximately 80 acres. Dispersed leave trees (10-15 trees/acre) would also be left uncut, including the largest and oldest trees in the Unit, with an emphasis of retaining ponderosa pine, Douglas-fir, and western larch. For volume of snags and down logs to be retained on site refer to the wildlife mitigation measures at the end of Chapter 2.

After harvest, the Unit would be site-prepared for tree planting/fuels reduction by grapple piling the logging slash and burning the piles. The objective is to establish a minimum of 538 planting spots per acre and well distributed over 90% of the area. Reforestation would be by hand planting. Planting would consist of ponderosa pine, Douglas-fir, and western larch on a 9 foot by 9 foot spacing. Control pocket gophers by grain baiting (Summer/early fall) for up to 3 years after hand planting conifers.

The 80 acres of plantations would be thinned (young stand thinning) in 11-20 years and would also have a planned underburn treatment in 21-30 years.

Units B, C, and D

Current Condition:

Dominated by grand fir 80-100 years of age. Douglas-fir, western larch, and ponderosa pine in the same age group are also present within the Unit. Ponderosa pine trees (150-250 years of age) are also present, but in low numbers.

Insect and disease mortality to grand fir is moderate/high. Top kill, due to spruce budworm, has occurred to the majority of the grand fir within these Units.

Unit is primarily a single story, except for dense patches of saplings growing within landings and other small openings resulting from a partial cut in 1980.

Suitable owl habitat.

Proposed Treatment:

Regeneration Harvest (Medium Forest Retention). Within the matrix allocated lands, recently killed and declining grand fir and Douglas-fir would be removed. Thirty percent overstory cover in aggregates and dispersed trees would be left as green tree retention, except Unit C would retain 40% canopy closure. One acre or less/greater aggregates would be left uncut totaling 10.5% of the unit area. Dispersed leave trees (20-35 trees/acre) would also be left uncut, including the largest and oldest trees in the Unit, with an emphasis of retaining ponderosa pine, Douglas-fir, and western larch. For volume of snags and down logs to be retained on site refer to the wildlife mitigation measures at the end of Chapter 2.

After harvesting the Unit would be site-prepared for tree planting/fuels reduction by grapple piling the logging slash and burning the piles. The objective is to establish a minimum of 300 planting spots per acre and well distributed over 90% of the area. Reforestation would be by hand planting. Planting would consist of ponderosa pine, Douglas-fir, and western larch on a 12 foot by 12 foot spacing. Control pocket gophers by grain baiting (Summer/early fall) for up to 3 years after hand planting conifers.

The 231 acres of "understory" plantations would be thinned (young stand thinning) in 11-20 years and would also have a planned underburn treatment in 21-30 years.

Unit E

Current Condition:

The Unit is a mix of species and age classes reflecting past partial harvest cuts. The overstory and understory is evenly mixed with Douglas-fir, grand fir, and ponderosa pine, with some western larch and Oregon white oak. The Unit is tending toward an uneven aged tree distribution, with a few old growth ponderosa pines and numerous 80-year-old Douglas-fir and grand fir, and a mix of younger age groups in the 1 to 12 inch DBH size class.

Previous partial harvest cuts have opened the canopy enough to permit the establishment of notable quantities of ponderosa pine and western larch in the understory. Grand fir reproduction is more prevalent and without disturbance would create a dense understory.

Insect and disease mortality in the overstory is low.

Not suitable owl habitat.

Proposed Treatment:

Uneven age management. Within the matrix allocated lands, small and medium sized trees (8-21 inches), comprised of the poorest grand fir and Douglas-fir (dead tops, diseased/damaged) would be removed. Fifty percent overstory cover in aggregates and dispersed trees would be left as green tree retention. One acre and less aggregates would be left uncut totaling 10.5% of the unit area. Total net acres treated = approximately 48 acres. For volume of snags and down logs to be retained on site refer to the wildlife mitigation measures at the end of Chapter 2.

After harvesting the Unit, fuels would be reduced by grapple piling the logging slash and burning the piles. Natural seedling would provide additional seedlings over time.

The unit would receive another uneven age management cutting prescription in 11-20 years.

Unit F

Current Condition:

Dominated by grand fir 80-100 years of age. Douglas-fir, western larch, and ponderosa pine in the same age group are also present within the Unit. Ponderosa pine trees (150-250 years of age) are also present, but in low numbers.

Insect and disease mortality to the grand fir is moderate. Top kill, due to the spruce budworm, has occurred to the majority of the grand fir within the Unit.

Unit is primarily a single story, except for dense patches of saplings growing within landings and other small openings resulting from a partial cut in 1980.

Existing dispersal and foraging habitat for spotted owls is poor quality.

Proposed Treatment:

Regeneration Harvest (Heavy Forest Retention). Within the matrix allocated lands, recently killed and declining grand fir and Douglas-fir would be removed. Forty percent overstory cover would be left as green tree retention. One acre and less aggregates would be left uncut totaling 10.5% of the unit area. Total net treated acres = approximately 65 acres. For volume of snags and down logs to be retained on site refer to the wildlife mitigation measures at the end of Chapter 2.

After harvest, the Unit would be site-prepared for tree planting/fuels reduction by grapple piling the logging slash and burning the piles. The objective is to establish a minimum of 200 planting spots per acre and well distributed over 90% of the area. Reforestation would be by hand planting. Planting would consist of ponderosa pine, Douglas-fir, and western larch on a 15 foot by 15 foot spacing. Control pocket gophers by trapping (Summer/early fall) for up to 3 years after hand planting conifers.

The 65 acres of "understory" plantations would be thinned (young stand thinning) in 11-20 years and would also have a planned underburn treatment in 21-30 years.

Unit G

Current Condition:

Dominated by grand fir 80-100 years of age. Douglas-fir, western larch, and ponderosa pine in the same age group are also present within the Unit. Ponderosa pine trees (150-250 years of age) are also present, but in very low numbers.

Insect and disease mortality to the grand fir is low to moderate. Top kill, due to the spruce budworm, has occurred to the majority of the grand fir within the Unit.

Unit is primarily a single story, except for dense patches of saplings growing within landings and other small openings resulting from a partial cut in 1980.

Suitable owl habitat.

Proposed Treatment:

Sanitation Thinning. Within the matrix allocated lands, recently killed and declining grand fir and Douglas-fir would be removed. An overall average of fifty percent overstory cover would be left as green tree retention. One acre and less aggregates would be left uncut totaling 10.5% of the unit area. Total net treated acres = approximately 91 acres. The overstory canopy would be reduced to between 35% cover (pockets of dead/dying grand fir) to 65% cover (healthy Douglas-fir/ponderosa pine). Leave trees would include the largest and oldest trees in the Unit, with an emphasis of retaining ponderosa pine, Douglas-fir, and western larch. Dense sapling patches would be thinned to 100 trees per acre, with the emphasis of removing the grand fir. For volume of snags and down logs to be retained on site refer to the wildlife mitigation measures at the end of Chapter 2.

After harvesting the Unit, fuels would be reduced by grapple piling the logging slash and burning the piles.

The unit would receive another sanitation/thinning cutting prescription in 11-20 years.

Unit H

Current Condition:

Dominated by grand fir 80-100 years of age. Douglas-fir, western larch, and ponderosa pine in the same age group are also present within the Unit. Ponderosa pine trees (150-250 years of age) are also present, but in very low numbers.

Insect and disease mortality to grand fir is high, resulting in less than 45% live canopy cover.

Unit is primarily a single story, except for dense patches of saplings growing within landings and other small openings resulting from a partial cut in 1980.

Suitable owl habitat.

Proposed Treatment:

Fuels Reduction and Reforestation. One acre and less aggregates would be left uncut totaling 10.5% of the unit area. Total net treated acres = approximately 39 acres. Dense sapling patches would be thinned to 100 trees per acre, with an emphasis of removing the grand fir. Maximum live tree diameter (dbh) cut limt is 6”. Concentrated slash pockets and downed trees (1000 hour fuels) in excess of 12 tons per acre (2% cover) would be grapple piled and the piles would be burned. A subsequent underburn would further reduce the fine fuels to 3 tons per acre or less. Reforestation would be by hand planting. Planting would consist of

ponderosa pine, Douglas-fir, and western larch on a 12 foot by 12 foot spacing. Control pocket gophers by trapping (Summer/early fall) for up to 3 years after hand planting conifers.

The 39 acres of plantations would be thinned (young stand thinning) in 11-20 years and would also have a planned underburn treatment in 21-30 years.

Unit I

Current Condition:

Dominated by grand fir 80-100 years of age. Douglas-fir, western larch, and ponderosa pine in the same age group are also present within the Unit. Ponderosa pine trees (150-250 years of age) are also present, but in very low numbers.

Unit is primarily a single story, except for dense patches of saplings growing within landings and other small openings resulting from a partial cut in 1980.

Insect and disease mortality to grand fir ranges from light to high.

Canopy cover is presently at approximately 45%, but is expected to decline to below 40% within the next five years due to continued mortality from insects and armillaria and laminated root rots.

Suitable owl habitat, but declining.

Proposed Treatment:

Fuels Reduction and Reforestation. Within the late successional reserve allocated lands, approximately 20% of the Unit would remain uncut (portions with little/no mortality or portions with a greater preponderance of Douglas-fir and ponderosa pine. Total net treated acres = approximately 53 acres. Elsewhere, the overstory canopy would be reduced to 35% (30 trees/acre) with the emphasis on retaining the Douglas-fir, ponderosa pine, western larch, and Englemann spruce tree component. Maximum live tree diameter (dbh) cut limit is 10". The cutting prescription would produce "gaps: < 2 acres/each to assist in the reforestation success of early seral species. All grand fir within 50 feet of an old-growth ponderosa pine would be removed. Within 250 feet of Road 8040020, logs/fuels in excess of 12 tons/acre (2% cover) would be grapple piled/burned and logs/fuels beyond 250 feet and in excess of 50 tons per acre (6% cover) would be grapple piled/burned. Merchantable logs would be removed prior to piling. A subsequent underburn would further reduce the fine fuels to 3 tons per acre or less. Reforestation would be by hand planting. Planting would consist of ponderosa pine, Douglas-fir, and western larch on a 15 foot by 15 foot spacing. Control pocket gophers by trapping (Summer/early fall) for up to 3 years after hand planting conifers. For volume of snags and down logs to be retained on site refer to the wildlife mitigation measures at the end of Chapter 2.

The 53 acres of "understory" plantations would be thinned (young stand thinning) in 11-20 years and would also have a planned underburn treatment in 21-30 years.

Units J, K, and L

Current Condition:

Dominated by grand fir 80-100 years of age. Douglas-fir, western larch, and ponderosa pine in the same age group are also present within the Unit. Ponderosa pine trees (150-250 years of age) are also present, but in very low numbers.

The Units are primarily a single story, except for dense patches of saplings growing within landings and other small openings resulting from a partial cut in 1980. In Units K and L, the overstory has been sufficiently opened to permit advanced conifer regeneration, mostly grand fir, throughout the Units.

Insect and disease mortality to the grand fir is moderate to high.

The canopy cover, within the Units, has declined to less than 40%.

Not suitable habitat.

Proposed Treatment:

Fuels Reduction and Reforestation. Logs/fuels in excess of 12 tons/acre (2% cover) would be grapple piled/burned. Unit L would have a 25 foot no cut buffer along each side of the ephermal stream. Total net treated acres = approximately 228 acres. The units would be underburned. Reforestation would be by hand planting. Planting would consist of ponderosa pine, Douglas-fir, and western larch on a 15 foot by 15 foot spacing. Control pocket gophers by trapping (Summer/early fall) for up to 3 years after hand planting conifers. For volume of snags and down logs to be retained on site refer to the wildlife mitigation measures at the end of Chapter 2.

The 228 acres of "understory" plantations would be thinned (young stand thinning) in 11-20 years and would also have a planned underburn treatment in 21-30 years.

Unit M

Current Condition:

Old growth Unit dominated with large ponderosa pine (200+ years) with Douglas-fir and grand fir in the younger age classes.

The understory layer of grand fir is composed of saplings to 20-inch diameter trees, which has been established with fire exclusion.

The grand fir defoliation is light with little mortality.

The Unit surrounds Road 8040 and 8040020 junction, which is a key location for fire suppression strategies.

Cherry Flats dispersed area campground (popular hunter camp in the fall) is within the Unit.

The unit is outside the _ mile circle of the spotted owl site.

Proposed Treatment:

Ponderosa Pine Understory Thin. Within the late successional reserve allocated lands, approximately 2/3's of the 6-20" dbh grand fir understory would be removed, especially underneath the ponderosa pine old-growth trees. . One acre and less aggregates would be left uncut totaling 10.5% of the unit area. Total net treated acres = approximately 61 acres. Campsite screening at Cherry flats would be left uncut. The overstory cover would be

retained at 60% canopy or greater. Maximum live tree diameter (dbh) cut is 10". Merchantable logs would be removed prior to piling. For volume of snags and down logs to be retained on site refer to the wildlife mitigation measures at the end of Chapter 2.

Units N, O, P, Q, S, T, U, and W

Current Condition:

Dominated by grand fir 80-100 years of age. Douglas-fir, western larch, and ponderosa pine in the same age group are also present within the Unit. Ponderosa pine trees (150-250 years of age) are also present, but in very low numbers.

Near the Gotchen Creek Guard Station and eastward along Road 8200060, these Units have a higher component of lodgepole pine of various ages, which has created a dense, mid-level canopy layer.

Overall mortality within these Units is light.

Average canopy cover exceeds 50%.

Suitable habitat.

Proposed Treatment:

Fuelbreaks. Within the late successional reserve allocated lands (439 acres) and Matrix lands (30 acres), the trees would be thinned to a minimum 50% tree canopy. The maximum green tree cut diameter would be 10" dbh. Leave trees would be pruned up to 10 feet or to a 40 percent green canopy. Leave tree preference would be Douglas-fir, ponderosa pine, western larch, and Englemann spruce, along with the largest diameter grand fir to meet the canopy cover. All intermediate grand fir trees, within 50 feet of old growth ponderosa pines, would be removed. Ladder fuels (10" dbh cut limit) and brush would also be cut, except one – 1/100 acre clumps of understory, would be retained, if available. For volume of snags and down logs to be retained on site refer to the wildlife mitigation measures at the end of Chapter 2.

The 469 acres of Shaded Fuelbreaks would be underburned in 6-10 years and 21-30 years.

Unit R

Current Condition:

These Units are young stands of planted and naturally seeded trees that were established following a regeneration-cut timber harvest. The age is uniform within the plantations and averages 30 years old. In most cases, plantations are primarily stocked with ponderosa pine; however, Douglas-fir, western larch, lodgepole pine, and grand fir are also present.

These two plantations had trees established at very high densities (400+ trees per acre) and have been pre-commercially thinned in the past to reduce stocking to 200-300 trees per acre.

Most of the plantations have low fuel loads. Logging slash was usually treated following the initial timber harvest

Proposed Treatment:

Plantation Maintenance on approximately 38 acres. Within the next five years, tree densities of two plantations, within the late successional reserve allocated lands, would be reduced to 100-200 trees per acre, retaining the largest ponderosa pine, Douglas-fir, and western larch trees. Leave tree spacing would be irregular due to leaving the largest trees of the desired species wherever they occur. Subsequent underburning would be implemented. Hand piles would be constructed around the unit's perimeter and burned prior to the interior underburn. A multi-year burning approach would be also implemented within plantations that contain mardon shipper habitat.

The 38 acres of plantations would be commercially thinned and underburned in 11-20 years.

Unit X

Current Condition:

Dense stand of lodgepole pine and grand fir, with lesser amounts of Douglas-fir and ponderosa pine. A range of ages and sizes are present.

Current canopy cover is 80-90%. The Unit provides owl dispersal habitat, but is not considered suitable habitat because the average tree diameter is not large enough.

The Unit contains little budworm activity due to the discontinuous arrangement of host species. There is a high potential for mountain pine beetle due to the high tree density of the lodgepole pine.

The Unit has a high potential for a crown fire due to the high stem density and crown closure.

Proposed Treatment:

Lodgepole Understory Thin. Within the late successional reserve allocated lands, the tree canopy would be reduced to 40% canopy cover by thinning the trees. One to two acre aggregates would be left uncut totaling 10.5% of the unit acreage. Leave tree preference would be Douglas-fir and ponderosa pine. Total net treated acres = approximately 51 acres. Merchantable logs would be removed prior to piling. For volume of snags and down logs to be retained on site refer to the wildlife mitigation measures at the end of Chapter 2.

Unit Y

Current Condition:

This Unit is comprised primarily with grand fir, 80-100 years of age, with lesser amounts of Douglas-fir and ponderosa pine of similar age. There are scattered ponderosa pine and Douglas-fir, which are approximately 150+ years of age.

The grand fir understory has not suffered much mortality from the insects and root rots. As a result, these trees are creating moisture and nutrient competition/stress on the older ponderosa pine trees.

The canopy cover is approximately 70% and the Unit was partially cut in the 1980's.

Down fuel load is approximately 10 tons (1-2% cover).

Proposed Treatment:

Legacy Tree Culturing. Within the late successional reserve allocated lands, half of the intermediate grand fir trees, within 50 feet of every other old-growth ponderosa pine, would be removed. Total net treated acres = approximately 81 acres. Maximum live tree diameter (dbh) cut is 10". Concentrations of slash would be handpiled and burned.

Unit Z

Current Condition:

Grassy meadow dominated by fescue grasses.

Aspens are scattered around the perimeter and interior of the meadow in clumps of mature trees and other clonal patches of saplings.

Interspersed with the aspen are ponderosa pine and lodgepole pine, which have seeded into the meadow. The conifers are of a variety of sizes and ages up to 80 years old.

The Unit was partially cut in 1980's and the current budworm activity is light.

Downed fuel loading within the meadow is very light.

Proposed Treatment:

Aspen Restoration. Within the late successional reserve allocated lands, lodgepole pine and ponderosa pine that are 2 feet tall to 10 inches dbh, would be cut. A twenty-five foot buffer along each side of the streams, within Gotchen meadows, would not be treated. Total net treated acres = approximately 10 acres. Some slash would be pulled into the buffers to deter grazing. Elsewhere, concentrated slash pockets and downed trees would be hand piled and the piles would be burned. Trees with mechanical defect or root/butt decay and threaten to fall on the Gotchen Creek Guard Station would also be removed, slash piled, and burned.

Units AA and BB

Current Condition:

Dominated by grand fir 80-100 years of age. Douglas-fir, western larch, and ponderosa pine in the same age group are also present within the Unit. Ponderosa pine trees (150-250 years of age) are also present, but in very low numbers.

Unit is primarily a single story, except for dense patches of saplings growing within landings and other small openings resulting from a partial cut in 1980.

Sapling patches are very dense (500+ trees per acre) and primarily grand fir and Douglas-fir, with a few ponderosa pine and western larch.

Insect and disease mortality to the grand fir is considered moderate but varies greatly throughout the Units.

Proposed Treatment:

Gap Sapling Thinning. Within the late successional reserve allocated lands, the tree density within existing, dense sapling patches (existing log landings and former created gaps only) would be thinned to 100 trees per acre. Maximum live tree diameter (dbh) cut limit is 6". Units AA and BB would not thin trees within 25' from the intermittent stream. Net treatment

acres = approximately 102 acres. Leave tree preference would be Douglas-fir, ponderosa pine, western larch, and Englemann spruce, along with grand fir to meet the tree spacing. Slash would be handpiled/burned.

APPENDIX F

APPENDIX F TREATMENT, PRIORITIES, AND METHODS

PLEASE SEE TREATMENT RX AND TREATMENT METHODS TABLE ON LAST PAGE OF THIS APPENDIX.

Alternative B

Unit	Gross LSR Acres	Net LSR Acres Treated	Gross Matrix Acres	Net Matrix Acres Treated	INITIAL ENTRY YEARS 1-5			YEARS 6-10		YEARS 11-20		YEARS 21-30	
					Treatment Rx	Treatment Method	Relative Ranking of Implementation Year(s) 1-5	Treatment Method	AC	Treatment Method	AC	Treatment Method	AC
A			89	80	LFR	MT,GPB,PUM,GB,HP	1-2			YST	80	UB	80
B			29	26	MFR	MT,GPB,PUM,GB,HP	1-2			YST	26	UB	26
C			206	184	MFR	MT,GPB,PUM,GB,HP	1-2			YST	184	UB	184
D			23	21	MFR	MT,GPB,PUM,GB,HP	1-2			YST	21	UB	21
E			54	48	UAM	MT,GPB,PUM	1-2			UAM	48		
F			73	65	HFR	MT,GPB,PUM,GT,HP	1-2			YST	65	UB	65
G			102	91	ST	MT,GPB,PUM	1-2			ST	91		
H	44	44			FRR	MNL,MT,GPB,FS,PUM,UB,RM,GT,HP	3-5			YST	44	UB	44
I	66	53			FRR	MT,FS,GPB,PUM,UB,RM,GT,HP	3-5			YST	53	UB	53
J	34	34			FRR	MT,FS,GPB,PUM,UB,RM,GT,HP	2-4			YST	34	UB	34
K	108	108			FRR	MT,FS,GPB,PUM,UB,RM,GT,HP	2-4			YST	108	UB	108
L	112	107			FRR	MT,FS,GPB,PUM,UB,RM,GT,HP	2-4			YST	107	UB	107
M	68	68			PPUT	MT,GPB	2-4						
N	75	75			SFB	MT,GPB,CH,P	2-4	UB	75			UB	75
O	22	22	29	29	SFB	MT,GPB,CH,P	2-4	UB	51			UB	51
P	34	34			SFB	MT,GPB,P	2-4	UB	34			UB	34
Q	44	44			SFB	MT,GPB,P	1-2	UB	44			UB	44
R	38	38			PM	YST,UB	3-5			CT,UB	38		
S	33	33	1	1	SFB	MT,GPB,P	1-2	UB	34			UB	34
T	82	82			SFB	MT,GPB,P	1-2	UB	82			UB	82
U	146	146			SFB	MT,GPB,P	1-2	UB	146			UB	146
V	7	6			SFBR	MNL.HPB,P	1-2	UB	6			UB	6
W	3	3			SFB	MT,GPB,P	3-5	UB	3			UB	3
X	57	51			LPUT	MT,GPB	1-2						
Y	162	81			LTC	MNL,HPB	3-5						
Z	11	10			AR	MNL,HPB	1-2						
AA	663	50	2	0	LGST	MNL,HPB	2-4						
BB	662	50			LGST	MNL,HPB	2-4						
Totals	2471	1139	608	545									

Alternative C

Unit	Gross LSR Acres	Net LSR Acres Treated	Gross Matrix Acres	Net Matrix Acres Treated	INITIAL ENTRY YEARS 1-5			YEARS 6-10		YEARS 11-20		YEARS 21-30	
					Treatment Rx	Treatment Method	Relative Ranking of Implementation Year(s) 1-5	Treatment Method	AC	Treatment Method	AC	Treatment Method	AC
A			89	80	LFR	MT,GPB,PUM,GB,HP	1-2			YST	80	UB	80
B			29	26	MFR	MT,GPB,PUM,GB,HP	1-2			YST	26	UB	26
C			206	184	MFR	MT,GPB,PUM,GB,HP	1-2			YST	184	UB	184
D			23	21	MFR	MT,GPB,PUM,GB,HP	1-2			YST	21	UB	21
E			54	48	UAM	MT,GPB,PUM	1-2			UAM	48		
F			73	65	HFR	MT,GPB,PUM,GT,HP	1-2			YST	65	UB	65
G			102	91	ST	MT,GPB,PUM	1-2			ST	91		
H	44	39			FRR	MNL,MT,FS,TH,GPB,PUM,UB,RM,GT,HP	3-5			YST	39	UB	39
I	66	53			FRR	MT,FS,TH,GBP,PUM,UB,RM,GT,HP	3-5			YST	53	UB	53
J	34	30			FRR	MT,FS,TH,GBP,PUM,UB,RM,GT,HP	2-4			YST	30	UB	30
K	129	113			FRR	MT,FS,TH,GBP,PUM,UB,RM,GT,HP	2-4			YST	113	UB	113
L	112	100			FRR	MT,FS,TH,GBP,PUM,UB,RM,GT,HP	2-4			YST	100	UB	100
M	68	61			PPUT	MT,GPB	2-4						
R	38	38			PM	YST,UB	3-5			CT,UB	38		
S	144	144	1	1	SFB	MT,TH,GPB,P, CH	1-2	UB	145			UB	145
X	57	51			LPUT	MT,GPB	1-2						
Y	278	249	2	2	LTC/UDR	MNL,TH,GPB, FS	1-2					UB	251
Z	11	10			AR	MNL,HPB	1-2						
AA	571	485			UDR	MT,TH,GPB	2-4					UB	485
BB	354	30			LGST	MT,TH,GPB	2-4						
CC	293	249	1	1	UDR	MT,TH,GPB	2-4					UB	250
DD	25	21			UDR	MT,TH,GPB	2-4					UB	21
EE	30	22			FB	MT,TH,GPB,P	1-2	UB	22			UB	22
FF	6	6			FB	MT,TH,GPB,P	1-2	UB	6			UB	6
Totals	2260	1701	580	519									

Alternative D

Unit	Gross LSR Acres	Net LSR Acres Treated	Gross Matrix Acres	Net Matrix Acres Treated	INITIAL ENTRY YEARS 1-5			YEARS 6-10		YEARS 11-20		YEARS 21-30	
					Treatment Rx	Treatment Method	Relative Ranking of Implementation Year(s) 1-5	Treatment Method	AC	Treatment Method	AC	Treatment Method	AC
A			89	80	LFR	MT,GPB,PUM,GB,HP	1-2			YST	80	UB	80
B			29	26	MFR	MT,GPB,PUM,GB,HP	1-2			YST	26	UB	26
C			206	184	MFR	MT,GPB,PUM,GB,HP	1-2			YST	184	UB	184
D			23	21	MFR	MT,GPB,PUM,GB,HP	1-2			YST	21	UB	21
E			54	48	UAM	MT,GPB,PUM	1-2			UAM	48		
F			73	65	HFR	MT,GPB,PUM,GT,HP	1-2			YST	65	UB	65
G			102	91	ST	MT,GPB,PUM	1-2			ST	91		
H	44	39			FRR	MNL,MT,FS,GPB,PUM,UB,RM,GT,HP	3-5			YST	39	UB	39
I	66	53			FRR	MT,FS,GBP,PUM,UB,RM,GT,HP	3-5			YST	53	UB	53
J	34	30			FRR	MT,FS,GBP,PUM,UB,RM,GT,HP	2-4			YST	30	UB	30
K	108	97			FRR	MT,FS,GBP,PUM,UB,RM,GT,HP	2-4			YST	97	UB	97
L	112	101			FRR	MT,FS,GBP,PUM,UB,RM,GT,HP	2-4			YST	101	UB	101
M	68	61			PPUT	MT,GPB	2-4						
N	75	75			FB	MT,GPB,CH,P	2-4	UB	75			UB	75
O	22	22	29	29	FB	MT,GPB,CH,P	2-4	UB	51			UB	51
P	34	34			FB	MT,GPB,P	2-4	UB	34			UB	34
Q	44	44			FB	MT,GPB,P	1-2	UB	44			UB	44
R	38	38			PM	YST,UB	3-5			CT,UB	38		
S	33	33	1	1	FB	MT,GPB,P	1-2	UB	34			UB	34
T	82	82			FB	MT,GPB,P	1-2	UB	82			UB	82
U	146	146			FB	MT,GPB,P	1-2	UB	146			UB	146
W	3	3			FB	MT,GPB,P	3-5	UB	3			UB	3
X	57	51			LPUT	MT,GPB	1-2						
Y	162	81			LTC	MNL,HPB	3-5						
Z	11	10			AR	MNL,HPB	1-2						
AA	663	50	2	0	LGST	MNL,HPB	2-4						
BB	662	50			LGST	MNL,HPB	2-4						
Totals	2464	1100	608	545									

Treatment Rx			Treatment Method	
AR	Aspen Restoration		**CH**	Chipping (100 feet from road)
FRR	Fuels Reduction and Regeneration		**CT**	Commercial Thin
FB	Fuelbreak		**FS**	Fall snags in excess of 10/acre
LFR	Light Forest Retention		**GB**	Gopher bait
MFR	Moderate Forest Retention		**GPB**	Grapple Pile and Burn
HFR	Heavy Forest Retention		**GT**	Gopher Trapping
UAM	Uneven Age Management		**HP**	Hand Planting
LGST	Landing Gap Sapling Thin		**HPB**	Handpiled and Burn
LPUT	Lodge Pole Understory Thin		**MNL**	Manual Treatment
LTC	Legacy Tree Culture		**MT**	Mechanical Treatment
PM	Plantation Maintenance		**P**	Prune
PPUT	Ponderosa Pine Understory Thin		**PUM**	Pile or remove excess unmerchantable material
SFB	Shaded Fuelbreak		**RM**	Raking or Rapid Mopup
SFBR	Shaded Fuelbreak Riparian		**TH**	Thin understory to a 10” dbh limit
ST	Sanitation Thin		**UB**	Under Burn
UAM	Uneven Age Management		**YST**	Young Stand Thinning
UDR	Understory Density Reduction		**YSTU**	Young Stand Thinning/Underburning

APPENDIX G

Summary of Cumulative Actions			**2003-2013**	**2013-2023**	**2023-2033**	**2033-2043**	**2043-2053**
Activity	**Past & Present (Baseline Condition)**	**Foreseeable Future Activities**					
Grazing 516 head, 6/1-9/30	19,680 acres	19,680 acres	19,680 acres	19,680 acres	19,680 acres	19,680 acres	19,680 acres
Trails	4 miles	5.4 miles					
Present Fuel Reduction Thinning	35 acres	40 acres	40 acres				
Timber Harvest Regeneration LFR	1900 acres	1,052 acres		263 acres	263 acres	263 acres	263 acres
Young Forested Plantations (post 1960)	1900 acres						
Young Stand Thinning/Underburning	471 acres/0 acres	920	214 acres	438 acres	268 acres		
Timber Commercial Thinning	212 acres	1,896		268 acres	430 acres	550 acres	618 acres
Partial Harvest/Salvage	3882 acres						
Existing Roads	100 miles	No additions					
Horse Camp	3 acres	No change					
Snowparks	2 acres	No change					
White Salmon Seed Orchard	37 acres	No change					
Range Water Line	1.9 miles	No change					
Gotchen Risk-Reduction Strategy-Related Activities by Acres			**Future: Breakdown by Decade/Alt**				
Underburning, Alt B		1,710	475	38	1,197		
Underburning, Alt C		2,102	173	38	1,891		
Underburning, Alt D		1,672	469	38	1,165		
Young Stand Thinning, Alt B		722	0	722	0		
Young Stand Thinning, Alt C		711	0	711	0		
Young Stand Thinning, Alt D		696	0	696	0		
Commercial Thinning, Alt B, C, D		38	0	38	0		
Unevenaged management, Alt B,C,D		48	0	48	0		
Sanitation Thinning, Alt B, C, D		91	0	91	0		

APPENDIX H

APPENDIX H – SPECIAL HABITAT FEATURES

Special Habitat Features: Snags, Down Wood, Mistletoe Brooms, Hollow Trees, and Rock Outcrops

Decayed wood elements – snags, down wood, and live decaying trees - are widely recognized as essential habitat components for many wildlife species. Numerous wildlife functions are attributed to decaying wood as a source of food, nutrients, and cover (Marcot et al. 2001 p.584). The NWFP notes the importance of snags and down wood as key elements of LSOG forest, and provides minimum guidelines for managing decayed wood resources.

The amount and distribution of snags and down wood varies widely across the landscape. In the Gotchen Planning Area timber harvest, fire suppression, and tree mortality associated with insects and disease are major factors that have influenced the distribution of decayed wood. The existing condition is a patchy mosaic of forest stands of different successional stages with various levels of snags and down wood, ranging from 0 snags/acre in clearcuts to 50+ snags/acre (Topik, 1989).

The variation in snags and down wood in the Gotchen Planning Area is consistent with forest conditions throughout the eastern Cascades. Site-specific data on existing snag and down wood resources for the Gotchen Planning Area are not available. However, regional summaries of snag and down wood resources are available for Eastside Mixed-Conifer Forest (Rose et al. 2002) and grand fir plant associations (Topik 1989). These data provide a baseline index for snags and down wood in "unmanaged" eastside mixed-conifer forests, and provide a basis for estimating snag and down wood resources in the Gotchen Planning Area (Table H-1).

Table H-1. Average snag and down-wood densities in unmanaged Eastside Mixed Conifer Forests.

Successional Stage	Size Classes	Snags	Down Wood	
		snags/acre	% cover	logs/acre
Early Seral (<9.8" dbh)	Total	6.7	2.0	63.9
	Large	0.3	0.4	3.6
Mid –Seral (9.8"-19.7" dbh)	Total:	8.7	2.2	23.4
	Large:	1.7	0.5	4.2
Late-Seral (>19.7" dbh)	Total:	8.4	1.9	41.3
	Large:	3.2	0.7	6.4

Notes:

Early seral unmanaged refers to fire-regenerated stands, thus snag and down logs densities are relatively high.

Total snags include all snags ≥10" dbh, and ≥6.6 ft. tall.

Large snags include snags ≥19.7" and ≥6.6 ft. tall.

Total down logs include all logs ≥4.9" large-end diameter and ≥6.6 ft. long. Large down logs include logs ≥19.7" large-end diameter and ≥6.6 ft. long. Source: Rose et al 2001 p 586-588.

About 12% of the Gotchen Planning Area is comprised of young stands regenerated since 1960 with few or no snags, and about 25% is comprised of late-seral stands (>19.7" dbh). Management considerations for snags and down wood generally include maintaining the largest potential and available snags and down logs on site. Topik (1989) found that large snags and down logs are generally not abundant in the grand fir zone, and therefore suggested maintaining all large down logs >20” diameter, and retaining at least 2 large snags per acre for wildlife habitat. In a recent synthesis of snag and down-wood research, Marcot and others (2002) suggested that managing snags at densities of 6.7 – 12.5/per acre and down wood at 2-4 percent cover per acre would maintain wood-dependent wildlife at low to moderate levels. Managing for higher densities of snags and down wood cover may provide for a greater number of species, but can also contribute to fuel loading and increased fire risk.

Project design criteria for the Gotchen Planning Area include guidelines for maintaining snags and down-wood resources to support woodpecker populations (Table 3-17). The objective is to provide for the 100% population potential in the LSR and 40-100% in Matrix. These snag and down-wood guidelines are consistent with average levels for Eastside mixed-conifer forest. These criteria are listed in Chapter 2, under wildlife mitigation.

Hollow trees and mistletoe brooms, found predominately in LSOG forest, are also important habitat features. Management recommendations include maintaining all identifiable hollow trees and snags, as these structures provide critical denning, nesting, or roosting habitat for a wide-variety of wildlife species, and because hollow trees tend to be rare and can take centuries to develop (Marcot et al. 2002). Mistletoe brooms also provide important nesting habitat for a variety of species, therefore management recommendations include maintaining large, old trees with mistletoe brooms where they do not interfere with long-term management objectives.

Rock outcrops are also a common habitat feature across the Gotchen forested landscape. These features are prime habitat for bushytail woodrats and pika, important prey for the northern spotted owls. Management considerations include maintaining a 25-foot no-cut buffer around these features to minimize disturbance and maintain vegetative cover on these features. Open meadows and grass habitats are also important wildlife habitat features in the Gotchen Planning Area. Refer to section 3.1.4.5.1 (mardon skipper) for further discussion of meadow habitats.

Gifford Pinchot National Forest Management Indicator Species and Northwest Forest Plan Protection Buffer Species

The Gifford Pinchot National Forest Land and Resource Management Plan identified several wildlife species and/or species groups to serve as management indicator species (USDA 1990). Management indicator species occupy unique habitats that are important to a wide range of species that require the same habitat types. Table H-2 lists the management indicator species and the habitats these species represent.

Table H-2. Gifford Pinchot National Forest management indicator species.

Indicator Species	Habitats
Northern Spotted Owl, Pine marten, Pileated woodpecker	Represent species requiring late –successional and old-growth forest.
Cavity excavators (woodpecker species)	Represent species requiring snags and down logs.
Wood duck	Represent species requiring mature/old-growth deciduous riparian forest.
Goldeneye	Represent species requiring mature/old-growth coniferous riparian forest.
Deer and Elk Mountain Goat	Game species important for hunting/viewing.

The species and species groups dropped from further analyses are the wood duck, goldeneye, and mountain goat. The Gotchen Planning Area contains no ponds or lakes (either intermittent or permanent) that attract these breeding ducks. Several yearly sightings occur of mountain goats incidentally dispersing from higher elevations in late summer and early fall to mid-elevation sites like Sleeping Beauty. However, the habitat in the Gotchen Planning Area is not conducive to fulfilling the year-round life functions of mountain goats.

*American Marten (*Martes americana*)*

Status: Gifford Pinchot Forest Plan management indicator species.

The summary for marten ecology is taken directly from Ruggiero et al. 1994. Martens occupy a narrow band of habitat types, living in or near coniferous forests. They specifically associate closely with late-successional stands of mesic conifers with physical structure near the ground.

This ground structure is often used for dens or entering subnivean (under-snow) access points to capture or eat prey. The marten's diet consists of bird eggs and nestlings, insects, fish, and young mammals in the summer. In fall, berries and other fruits supplement the diet. During winter, voles, mice, hares, and squirrels dominate their diet.

In comparison with the Pacific fisher, the marten is engaged in more arboreal and subnivean activity, eats smaller prey and associates more strongly with coniferous forests.

Martens were captured on film during forest carnivore surveys between 1996 and 2000 at Smith Butte and the Upper White Salmon River. Habitat for marten is distributed widely across the Gotchen Planning Area and encompasses stands of mixed conifer forest.

Management considerations involve maintaining contiguous stands of mature coniferous forest so as to minimize isolating populations and suppressing genetic variability. In addition, maintaining forest structural complexity is important: Down wood, vertical vegetative layers, snags or hollow trees for dens and roost sites. As an interim measure in some stands without snags present, retain slash piles (away from standing trees and snags). A study in a lodgepole pine forest in central Oregon (Raphael and Jones 2002) finds that radio-tagged American marten use slash piles for resting cover and den sites.

Pileated Woodpecker (Dryocopus pileatus)

Status: Gifford Pinchot Forest Plan management indicator species, Washington State candidate species.

Perhaps the most common sight in the Gotchen Planning Area is that of pileated woodpecker feeding excavations in grand fir snags. These foraging sites are so extensive that they make food sources available for other species, accelerate decay processes and nutrient cycling, and may facilitate inoculation by heart-rot fungi and mediate insect outbreaks (Aubry and Raley 1999). The pileated woodpecker is a keystone habitat modifier in the Pacific Northwest (Aubry and Raley 1999). It is the largest woodpecker in this region, and the only species that forages primarily by excavating. Only pileateds are capable of creating large cavities in hard snags and decadent live trees, in which a wide array of other species use old pileated nests and roost cavities (Aubry and Raley 1999). Dietary studies indicate that about 97 percent of the prey for pileateds is *Camponotus* and *Formica* ants (Bull et al. 1992). Subsequent studies on these ant fauna associated with logs in the home ranges of pileated woodpeckers indicated that the same ant species that prey on budworm and are the prey for pileateds, are largely dependent upon the richness of large-diameter coarse woody debris (Torgersen and Bull 1995). Managing for pileated woodpeckers, which require larger snags and coarse woody debris than any other woodpecker, would provide for most species associated with late-successional and old-growth forest.

The majority of the 100 pileated woodpecker management areas on five National Forests in Washington and Oregon were occupied by the species (Bull and Jackson 1995). This holds true for one former pileated woodpecker management area within Unit BB (now LSR). Survey results in 2002 found that Unit BB serves as a core nesting area for a pileated woodpecker pair. There is a potential nest tree (begging juveniles were heard) in the southeast corner of unit BB (SE1/4 NW1/4 Section 26, T7N, R10E). The other obvious territorial core is north of Forest road 8200-181 and east of 8225-110 by Smith Butte. Mean home range during the breeding season is 1,390 acres and is 2,400 acres for individuals across the year (Altman 1999). Territory is defended by a pair year round against other territorial birds, and a pair member would not abandon a territory even if its mate is lost (Bull and Jackson 1995).

Management considerations (Altman 1999) include providing a five-acre no-harvest buffer around known nest or roost sites, a mix of snag and coarse woody debris decay and size classes, particularly in the largest sizes. Retain culls, well-distributed hard snags, damaged trees, and live trees with defects, dead tops, and cavities that can provide future snags.

Cavity Excavators

Status: NW Forest Plan protection buffer species, Gifford Pinchot Forest Plan management indicator species, Washington State candidate species.

The Gotchen Planning Area contains the most diverse array of woodpecker species and secondary cavity users known to occur on the Mt. Adams Ranger District. This is attributed to the mixing of the western and eastern plant zones. Woodpecker species that are documented to occur and breed within the Gotchen Planning Area include the Williamson's sapsucker, red-breasted sapsucker, hairy woodpecker, northern flicker, pileated woodpecker, black-backed woodpecker, three-toed woodpecker, white-headed woodpecker, and potentially, the red-napped sapsucker. The Lewis woodpecker, a Washington State candidate species, has not been observed

in the area, although the species is known to occur east of the Gotchen Planning Area in dry ponderosa pine forest.

Information is summarized on foraging techniques and nest-site requirements by woodpecker species. This gives a clearer idea which silviculture treatments, fuel reduction practices, types of leave trees and snags may benefit the various woodpecker species. Overall, the woodpecker species present in the Gotchen Planning Area require a wide variety of forest stand conditions, often very divergent from each other.

A woodpecker survey conducted across the Gotchen Planning Area in 2002 found northern flicker, black-backed woodpecker, pileated woodpecker, hairy woodpecker, and Williamson's sapsucker to be the most frequently encountered species in that order. Forest road 8020 was extremely rich in woodpecker activity and species diversity.

The most ubiquitous species encountered with the Gotchen Planning Area was the black-backed woodpecker, which is an irruptive woodpecker that focuses on landscapes with insect outbreaks. It feeds on wood-boring and bark beetles, which infest weakened [grand fir] trees for several years following [spruce budworm] insect outbreaks (Hadfield and Magelssen 2000). The black-backed woodpecker requires a much higher tree density than other woodpeckers (Dixon and Saab 2000). The northern flicker prefers edge habitat while the hairy woodpecker is found in both edge and interior forest habitats (Altman 2000). Williamson's sapsucker is at the western-most extent of its range within the Gotchen Planning Area. Williamson's sapsuckers often reuse the same nest tree for life, riddling it with up to 40 cavities (Ehrlich et al. 1988). Although white-headed woodpeckers are not a frequent occurrence (one regularly used nest site was found in East Timber Sale), silvicultural management of older ponderosa pine stands can provide greater habitat for this species on the eastside forest and potentially increase their numbers. The large response of pileated woodpeckers during the survey may be due to their strong territoriality to the playback calls of other woodpeckers. Breeding densities for all these species appear to be greater in larger [insect] outbreak areas where food resources are abundant than in those forests with no extensive disturbance (Bate pers. comm. 2002). Because aspen stands are a great attraction for woodpeckers, their restoration would increase wildlife species diversity (Bate pers. comm. 2002).

A management consideration includes locating wildlife aggregate leave-tree patches (0.5 to 2.0 acres) around any encountered active woodpecker nest tree during sale preparation. The only exception to this is the pileated, woodpecker, in which a five-acre leave-tree patch is recommended.

The Late-Successional Reserve Assessment recommends minimum numbers for snags and coarse woody debris by plant zone, but caution is given to avoid using these numbers in a cookie-cutter approach across the landscape. Instead, life-history data on the wildlife species are used to drive snag sizes and amounts (Table H-3).

Table H-3. Estimated snag requirements for multiple woodpeckers at 100% population levels by snag diameter and decay class. Numbers of snags per 100 acres are shown in parentheses.

Snag DBH (inches)	DECAY CLASS		
	Hard 2-3	Soft 4-5	Total Snags by DBH
≥15	RBSA (45) HAWO (91) BBWO (107)	WHWO (60) HAWO (91)	(394)
≥17	WISA (150) BBWO (150) TTWO (6)	NOFL (48)	(354)
≥25	PIWO (6)	- -	(6)
TOTAL	(555)	(199)	(754)

BBWO = black-backed woodpecker
HAWO = hairy woodpecker
NOFL = northern flicker
PIWO = pileated woodpecker
RBSA = red-breasted sapsucker
TTWO = three-toed woodpecker
WISA = Williamson's sapsucker

Sources: Dixon and Saab 2000 for BBWO, Dobbs et al. 1997 for WISA species and Brown 1985 for all other woodpeckers.

The above table estimates retaining 754 existing snags per 100 acres with approximately a 70%: 30% split between hard and soft snags to achieve a 100% population level. The decay class definitions for snags come out of Brown 1985.

For matrix lands, manage populations at a 40% level for all woodpeckers except the black-backed and white-headed, which are managed at 100%. Using the table above, this calculates to 489 snags per 100 acres.

The *Conservation Strategies for Landbirds on the Eastslope* (Altman 2000) recommends managing the Gotchen Planning Area for the life-history requirements of the pileated woodpecker and Williamson's sapsucker, which would provide for most species; however the black-backed woodpecker requires extremely high densities of dead and dying trees in aggregate patches. The pileated woodpecker requires even larger snags and down wood than the Williamson's sapsucker.

A recurring theme occurs when describing habitat conditions for woodpeckers from research studies in the Pacific Northwest. The studies reach into the Sierra Mountains, Idaho, eastern and east-central Oregon. Research studies have not focused on insect outbreaks in the grand fir plant zone where the tree species is an important nesting and foraging substrate due to its soft wood for cavity-excavator species.

Dead and dying grand fir serves as an important foraging substrate and is repeatedly illustrated under their life histories. It is evident that pileated woodpeckers are foraging on small to medium diameter grand firs across the Gotchen landscape as are all other species of woodpecker. Aspens,

due to their susceptibility to heartrot, attract woodpeckers according to Lisa Bate (pers. comm. 2002). Although the Gotchen Planning Area has extremely limited patches of quaking aspen, restoration of this unique habitat component would provide for cavity users.

Providing a diverse mosaic of forest stand conditions in large contiguous areas, capable of supporting multiple home ranges across the landscape, shall increase the variety of woodpecker species over time and other wildlife species shall also benefit.

Providing habitat for woodpeckers would also serve secondary cavity users. Spotted owls, marten, northern flying squirrels, small mammals, and many bird species use cavities created by primary excavators. All these species use cavities for roosting and would also use cavities in live trees or dead portions of live trees. Management considerations for secondary cavity users include retaining culls, damaged trees, and live trees with defects, dead tops, and cavities that can provide future snags. Retain all hollowed out live and dead trees for roost sites as they occur infrequently. These would benefit forest bats and Vaux's swifts, which nest in these types of structures. Emphasize soft snags for weak excavating species like nuthatches that prefer soft and decayed trees. Include a wide range of diameters and heights, but encompass mean preferred dbh ranging from 11 to 15 inches (Ghalambor and Martin, 1999).

APPENDIX I

APPENDIX I – DecAID ANALYSIS

DecAID Analysis, Gotchen Risk Reduction and Restoration Project

The DecAID Advisor is a tool that has been developed to replace the biological potential models that have previously been used to determine the sizes and numbers of snags to be left on the landscape following timber harvest or salvage activities (Mellen et al 2003). DecAID is based on published scientific literature, research data, wildlife databases, forest inventory databases, and expert judgment and experience, and does not rely on modeling wildlife populations.

The analysis process consists of 5 steps: **Step 1** Delineate the analysis area; **Step 2** Determine wildlife habitat types; **Step 3** Determine the plant series/subseries, fire regime, and topographic position within each habitat type; **Step 4** Determine structural condition for each analysis unit; **Step 5** Calculate snag densities and sizes, and down wood amounts and sizes.

Step 1
The analysis area used for this DecAID analysis is the Gotchen Planning Area, as described in the FEIS. Less than 9 percent of the Gotchen Planning Area is proposed for treatment under the preferred alternative.

Step 2
The wildlife habitat type within the Gotchen Planning Area is **Eastside mixed conifer forest: Eastern Cascades/Blue Mountains**.

Step 3
The Gotchen Planning Area was divided into 4 Plant Association Groups (PAG). The plant association groups are based on the climax vegetation which is determined by elevation and topography, which affect precipitation, temperature, and fire return interval. The four PAGs are summarized below.

The Douglas-fir PAG experienced frequent, low intensity fires, keeping the forest open and park-like, with widely-spaced trees and a carpet of low shrubs and herbaceous vegetation. Little conifer tree understory or coarse woody debris existed in these stands. Ponderosa pine was the dominant tree species. Western spruce budworm was largely absent due to a lack of host trees, and root diseases were limited in extent. (Management Level: 30% tolerance)

The Dry Grand Fir PAG experienced fire return intervals that were similar to the Douglas-fir PAG. Due to moister conditions, they might have had a slightly more patchy fire spread, or slightly longer fire return interval, plus better growing sites for Douglas-fir and grand fir. The average fire return interval is estimated to be 10 to 22 years. The forests were likely fairly open park-like stands with clumps of mature trees. Mature sites were dominated by ponderosa pine, and spruce budworm activity was episodic. (Management Level: 30% tolerance)

The Wet Grand Fir PAG includes cooler, moister sites, typical of higher elevations. It can be distinguished from drier sites due to the occurrence of lodgepole pine, western larch, and western white pine; ponderosa pine is uncommon. Fire is less common on these sites and they are commonly classified as moderate-severity fire regime, with a fire-return interval of 70-200 years. Historically, this PAG had the most host material for western spruce budworm, and root diseases were more common than in the drier types. (Management Level: 50% tolerance)

The Mountain Hemlock-Subalpine Fir PAG occurs in the higher elevations in the Cascades. The forests had a developed understory and downed logs. Fires burned infrequently and intensely with a return interval of 150+ years. Stand replacement fires were typical. Most fires Gotchen Planning Area. **No treatment is proposed within this PAG. (**Management Level: 80% tolerance)

Step 4
The four Plant Association Groups in the Gotchen Planning Area contain a range of structural conditions. The structure conditions described in DecAID, Larger Trees, Open Canopy, and Small/Medium Trees are all found in the Gotchen Planning Area.

The **Open Canopy** structural condition class is defined as stands with tree stocking less than 10%, or tree stocking equal to or greater than 10% and quadratic mean diameter is 1-9 inches. This is equivalent to the Stem Initiation structure class in the FEIS. **No treatment that would affect snags or down wood is proposed for stands in this condition class.**

The **Small/Medium Tree** structural condition class includes stands with tree stocking greater than 10%, and quadratic mean diameter from 10 to 19 inches. This is equivalent to the Stem Exclusion and Young Forest/Multistory structure classes in the FEIS.

The **Larger Tree** structural condition includes stands with tree stocking greater than 10% and quadratic mean diameter of 20 inches or more. This is equivalent to the Understory Reinitiation and Old Forest structure classes in the FEIS.

Step 5 Indications of snag and down wood densities, amounts, and sizes from DecAID .

	30% tolerance level *	50% tolerance level **
Small/Medium Tree class		
Snags	6.7/ac. >=10" dia. of which 2.7/ac. are >=19.7" dia.	12.5/ac. >=10" dia. of which 4.2/ac. are >=19.7" dia. Some high density clumps of 32/ac. of which 8/ac. are >=19.7"
Logs	2% ground cover with pieces 5"-8" dia. Decay classes I-V.	3% ground cover with pieces 8"-10" dia. Some high density areas with 4.5% cover. Decay classes I-V.
Large Tree class		
Snags	5.3/ac. >=10" dia. of which 3.6/ac. are >=19.7" dia.	9/ac. >=10" dia. of which 5.3/ac. are >=19.7" dia. Some high density clumps of 32/ac. of which 8/ac. are >=19.7"
Logs	2% ground cover with pieces 5"-8" dia. Decay classes I-V.	3% ground cover with pieces 8"-10" dia. Some high density areas with 4.5% cover. Decay classes I-V.

* 30% tolerance level includes stands within the Dry Douglas-fir and Dry Grand Fir PAGs

** 50% tolerance level includes stands within the Wet Grand Fir PAG

Landscape considerations for snags and down wood

Landscape distribution of snags observed in unharvested inventory plots.
Data from unharvested plots can help to set objectives for snags across the landscape. The following data describe distribution of snags on unharvested plots (n=754) in the **Small/Medium Tree** vegetation condition.

- About 3% of the area of unharvested plots has >57 snags /acre that are at least 10 inches diameter
- 11% of the area of unharvested plots has >30snags/acre that are at least 10 inches diameter
- About 60% of the area of unharvested plots has >6 snags /acre that are at least 10 inches diameter
- 15% of the unharvested are is devoid of snags at least 10 inches diameter and 6.6 feet tall

- 1% of the area of unharvested plots has >18 snags/acre that are at least 19.7 inches diameter
- 14% of the area of unharvested plots has >8 snags per acre that are at least 19.7 inches diameter
- 34% of the area of unharvested plots has >4 snags/acre that are at least 19.7 inches diameter

- 31% of the area of unharvested plots has no large snags at least 19.7 inches diameter.

The following data describe distribution of snags on unharvested plots (n=168) in the **Larger Tree** vegetation condition. (In the drier portions of this vegetation condition, unharvested plots may not represent "natural" conditions due to decades of fire suppression, they are however, the best approximation that we have of such conditions.)

- Less that 1% of the unharvested plots have >57 snags/acre that are at least 10 inches diameter
- 7% of the unharvested plots have >30 snags/acre that are at least 10 inches diameter
- 46% of the unharvested plots have >6 snags/acre that are at least 10 inches diameter
- 22% of the unharvested plots are devoid of snags that are at least 10 inches diameter

- 5% of the unharvested plots have >18 snags /acre that are at least 19.7 inches diameter
- 19% of the unharvested plots have >8 snags /acre that are at least 19.7 inches diameter
- 43% of the unharvested plots have >4 snags /acre that are at least 19.7 inches diameter
- 32% of the unharvested plots have no large snags that are at least 19.7 inches diameter

This patchy distribution that occurs in area of unharvested plots, reflecting a somewhat natural condition, would provide some areas of dense snags for species that require that condition such as silver-haired bat, black-backed woodpecker and pileated woodpecker; and areas of lower density that can be used by white-headed woodpecker.

Less than 9% of the Gotchen Planning Area is proposed for treatment in the preferred alternative. The level of snags that would be retained as mitigation in the treated areas is similar to what was found on a large proportion of unharvested plots, and would slightly exceed what is recommended for the 50% tolerance level in the Larger Tree condition class (Mitigations W6-W8). The remaining untreated portions of the Gotchen Planning Area would have snag densities that range from very dense (50+ per acre) to sparse.

Landscape distribution of down wood in "natural conditions"
The following data describe distribution of down wood on unharvested plots (n=738) in the **Small/Medium Tree** vegetation condition.

- None of the area of unharvested plots has measurable (>4.9 inch diameter) down wood cover as high as that used by three-toed woodpecker and black-backed woodpecker at the 80% tolerance level
- 18% of the area of unharvested plots has measurable down wood cover above 5 percent
- 27% of the area of unharvested plots has measurable down wood cover above 4 percent
- 38% of the area of unharvested plots has measurable down wood cover above 3 percent; the value for percent cover is similar to the 50% tolerance level for inventory data
- 52% of the area of unharvested plots has measurable down wood cover above 2 percent; the value for percent cover is similar to the 30% tolerance level for inventory data

- 37% of the area of unharvested plots has above 1% cover of large down wood present (at least 19.7 inches diameter)
- 19% of the area of unharvested plots is devoid of measurable down wood (>4.9 inch diameter)
- 63% of the area of unharvested plots is devoid of large down wood (at least 19.7 inches diameter)

The following data describe distribution of down wood on unharvested plots (n=166) in the **Larger Tree** vegetation condition.

- None of the area of unharvested plots has measurable (>4.9 inch diameter) down wood cover as high as that used by three-toed woodpecker and black-backed woodpecker at the 50% tolerance level
- 11% of the area of unharvested plots has measurable down wood cover above 5 percent
- 13% of the area of unharvested plots has measurable down wood cover above 4 percent
- 24% of the area of unharvested plots has measurable down wood cover above 3 percent; the value for percent cover is similar to the 50% tolerance level for inventory data
- 42% of the area of unharvested plots has measurable down wood cover above 2 percent; the value for percent cover is similar to the 30% tolerance level for inventory data
- 28% of the area of unharvested plots has above 1% cover of large down wood present (at least 19.7 inches diameter)
- 34% of the area of unharvested plots is devoid of measurable down wood (>4.9 inch diameter)
- 59% of the area of unharvested plots is devoid of large down wood (at least 19.7 inches diameter)

The amount of down wood that would be retained in the areas proposed for treatment outside of Matrix would be between 2 and 3 percent cover when pieces down to 5 inches diameter and 1 meter in length are considered. This is similar to what was found in 42 percent of the unharvested plots. The proposed treatment area in Matrix would probably have less than 1% measurable down wood cover, however this condition is also found in unharvested inventory plots. Retention of down wood above these levels in the Gotchen Planning Area would probably be counter to the need to reduce the risk of large stand replacing fires.

The portions of the Gotchen Planning Area that would be left untreated would likely have areas with a higher percentage of down wood cover, especially as snags fall over time, as well as areas with lower cover.