Appendix B – Implementation Information

Additional treatment prescription details (Novak 2007)
Douglas fir and lodgepole pine stands would be managed to better withstand and help in reducing severe fire and moderate-high to high levels of insect/disease disturbance; in particular Douglas-fir and mountain pine beetle. This would be accomplished by leaving mature and older lodgepole pine stands at densities around 80 to 100 square feet of basal area per acre (presently many of these older stands are at densities greater than 150 square feet of basal area per acre) and in older Douglas-fir stands, densities lower than 120 square feet of basal area per acre. An emphasis would be placed on thinning (or killing) from below many of the smaller trees, but at the same time leaving some of these smaller trees in all diameter classes (if present). These smaller trees will provide for the future overstory trees when the older overstory trees die from disease/insect attack and wildfire/prescribed fire damage. There will also be an emphasis to remove (or kill in the case of prescribe fire) some of the overstory (older and larger) trees when achieving stand densities of 80 to 130 sq.ft. ba. per acre. Where stand densities are currently below 80 to 100 sq.ft. ba. per acre, reduce densities to 50 to 60 of basal area per acre. Where lodgepole pine forests are heavily diseased, consider removing 80% to 90% of these stands to be replaced with healthy conifer seedlings that grow vigorously. Down woody debris would be left at low to moderate levels (10 to 15 tons per acre).

After thinning treatments are completed, stands will have reduced densities, reduced ladder fuels, a more discontinuous crown cover, and a more patchy structure. Within all units, the species of dominance will continue. Where Douglas-fir dominated the overstory before thinning, Douglas fir will continue to dominant in the overstory. Where lodgepole pine dominated the overstory before thinning, lodgepole pine will continue to dominate the overstory, with a mix of subalpine fir, Englemann spruce and Douglas fir in the understory. For the most part, the post-treatment stands will be single or two-storied. Surviving seedlings, saplings and poles will create the second story.

Based on the present coniferous cover, the following prescriptions (based on FVS and FFE model outputs) for **thinned** treatments in the **larger** sized stands (defined as **mature or older forest**) will be applied: 1) LP13, DF13, LPDF12 and DF12: **remove in all diameter** classes (3”-6”, 6”-10”, 10”-20”, 20”-25” and >25”) about 50% to 60% of the existing trees per acre. In virtually all cases, this equates to leaving about 90 square feet of basal area (BA) per acre in stands that exceed 150 BA per acre presently and leaving about 50 BA per acre in stands where BA per acre is currently between 85 to150. Basal area per acre is defined as (3.14) x (radius squared) for each tree and then added up for an entire acre. Spacing between trees varies in the 10” to 20” diameter at breast height (dbh) class from 20 to 25 feet (in mostly lodgepole pine stands) and 35 to 40 feet in the greater than 20” dbh class (in what is mostly Douglas-fir stands).

Mechanical treatments (thinning) in the **younger sapling to pole size lodgepole pine** stands differs markedly from the above prescriptions for mature and older stands. Based on FVS and FFE model run outputs, suggested treatment would thin from below about

half of the present BA (varies from 140 to 100 BA). The suggested removal equates to around 15 to 17 feet spacing (with down woody debris remaining at between 7 to 10 tons per acre in mostly the >3" size class) between boles.

Because of the nature of the prescribed thins, the overall size class for each treated forest stand will remain the same. In other words, if the stand was a mature/medium stand before treatment, it will remain so after treatment.

How trees will be prioritized for cut or leave within a treatment area.

Many of the units have a combination of several stand conditions. The conditions range from smaller precommercial size trees all the way up to trees with average diameters exceeding 20" dbh and heights exceeding 75 feet. In order to address these varying conditions within units, the following marking guidelines will be used **for trees greater than 15' tall** (trees less than 15' will be addressed in the overall silviculture prescription). **Overall, the dominant theme is to thin trees approximately 13' between crowns.**

1. Where portions of units are entirely precommercial in size (usually less than 3"-4"dbh) uniform spacing of 20' X 20' between boles (plus or minus 3'—this should allow 13' between crowns). Where aspen trees exceed 2" dbh. thin-out all conifers 1 tree length from these aspen trees.

   Desired individual tree species preference are as follows: #1---Douglas-fir, #2—limber pine, #3---lodgepole pine, #4---Englemann spruce and #5 subalpine fir. The tree species preference will also follow these guidelines (these guidelines are not listed in order of importance): 1. The selected leave tree is at least ½ as tall in height when compared to an adjacent cut tree if the preferred species of let's say Douglas-fir is smaller than a lodgepole pine. 2. The selected tree has a moderate to high probability of not having snow damage occur in the future. 3. Selected trees have healthy crowns, a large crown ratio and are free of forks, sweeps or other defects. 4. The leave tree has no signs of disease or insect attack. However, if few leave trees present in the area are free of disease or insect damage, leave the best of what trees there are. Highest concern is with dwarf mistletoe infections. Remove as many of the infected trees as possible while staying within the maximum spacing requirements. All stumps will be less than 6 inches.

2. Where portions of units consist of trees greater than precommercial thin size (less than 3" to 4" dbh), but are overall less than 20" in diameter, thin to a uniform spacing of 25' X 25' between boles (plus or minus 3'--- the hope is to have with this spacing, crowns separated by 13'). Where aspen trees exceed 3" dbh. thin-out **all conifers one** tree length from these aspen trees This spacing guideline should address most of the lodgepole pine forest and mixed lodgepole pine, Englemann spruce, subalpine fir and Douglas-fir forest.

   <u>These preferences/guidleines apply to treatment descriptions #2 and #3 below</u>. Desired individual tree species preference are as follows: #1---Douglas-fir, #2—

limber pine/whitebark pine, #3-- lodgepole pine, #4---Englemann spruce and #5 subalpine fir. The tree species preference list above assumes the following guidelines (these guidelines are not listed in order of importance) are followed. Overall, species preference matters only after the health and phenotype of each tree is looked at. We do not want to follow the species preference guidelines if the tree to leave is in worse shape from a health and phenotypic stand point. 1. Based on the above species preference, select leave trees must be at least ½ as tall as a less preferred species. For example, all things being equal (health and phenotypic characteristics), leave a Douglas fir over a lodgepole pine if the Douglas fir is at least ½ as tall as the adjacent lodgepole pine. 2. The selected tree has a moderate to high probability of withstanding future snow damage. 3. Selected trees have healthy crowns, a larger crown ratio and are free of forks, sweeps or other defects. 4. The leave tree has little to no signs of disease or insect attack. Highest concern is with dwarf mistletoe infections. Remove as many of the infected trees as possible while staying within the maximum spacing requirements.

3. Where portions of units consist of a **dominance of Englemann spruce and or subalpine fir trees** greater than 20"dbh (with only an occasional Douglas fir tree), thin to a uniform spacing of 30' X 30' between boles (plus or minus 3'--- the hope is to have with this spacing, crowns separated by 13'). Where aspen trees exceed 3" dbh. thin-out **all conifers one** tree length from these aspen trees This spacing guideline should address most of the larger forest found throughout many of the units with larger trees.

4. For units situated on the drier/warmer slopes, consisting of a **predominantly Douglas fir** trees greater than 14"dbh, with some lodgepole pine (10-16 inches dbh), and occasional Englemann spruce and subalpine fir trees, **thin to a uniform spacing of 35' X 35' between boles** (plus or minus 3'--- the hope is to have with this spacing, crowns separated by 13'). All DF greater than 40 inches dbh, no matter the tree condition, will be marked as legacy trees (leave trees). Where individual healthy, mature aspen trees exceed 5" dbh, thin-out all conifers **one** tree length from these aspen trees, with the exception of the greater than 40 inch dbh DF. Remove all conifers within dense aspen clones where feasible with the exception of the greater than 40 inch dbh DF. This spacing guideline should address most of the larger forest found throughout many of the units with larger trees.

   Desired individual LEAVE tree species preference are as follows: #1-- Douglas-fir, #2-- lodgepole pine, #3 --Englemann spruce, and #4 subalpine fir.
   The LEAVE tree species preference will also follow these guidelines (these guidelines are not listed in order of importance): 1. **All DF greater than 40 inches dbh, no matter the tree condition –** ***generally begin leave tree spacing from these larger diameter trees***; 2. Leave trees have healthy crowns, a large crown ratio and are relatively free of forks, sweeps or other defects; 3. Leave tree has a moderate to high probability of not having snow damage occur in the future (especially for LPP, SAF, S); 4. The leave tree has no signs of disease or insect attack. However, if few leave trees present in the area are free of disease or insect damage, leave the best of

what trees there are. Highest concern for the LPP component is the degree of dwarf mistletoe infection. Remove as many of the infected trees as possible while staying within the maximum spacing requirements.

Table B-1: Lonesome Wood Vegetation management Project Operating Period by Treatment Unit

Unit #	Purpose For Treatment	Activity Acres the Selected Alternative	Primary Treatment Activity	Operating Period	Applicable timing restrictions
1	WUI & Evacuation	65	Commercial Thin	Labor Day – December 1	A, B (part), G (Small part)
2	WUI & Evacuation	220	Small Tree Thin	May 1-December 1	A,
5	WUI & Evacuation	25	Commercial Thin	August 16-December 1 except area within ¼ mile homes which would be restricted until after Labor Day.	A, B, G (small part)
6	WUI & Evacuation	52	Small Tree Thin may use mechanized method	Labor Day -December 1 with part open August 16-Labor Day	A, G (small part)
7	Evacuation Route & Fuel Break	25	Commercial Thin	August 16-December 1	A, G,
9	Evacuation Route, Fuel Break	15	Commercial Thin	August 16-December 1	A, G,
10	Evacuation Route & WUI	122	Small Tree Thin may use mechanized method	August 16-December 1 Except area within ¼ mile of Cozy Corners restricted until after Labor Day	A, B (very small part), E (small part), F (about ½), G
11	Evacuation Route & Fuel Break	40	Commercial Thin	August 16-December 1	A, F, G
13	WUI & Evacuation	45	Pretreat & Rx burn	Aug 16-December 1	A, G

Unit #	Purpose For Treatment	Activity Acres the Selected Alternative	Primary Treatment Activity	Operating Period	Applicable timing restrictions
14	WUI, Aspen, Evacuation Route	205	Commercial Thin	May 1 – June 14 with no Memorial day Weekend operations, Labor Day to December 1 From labor Day to 3rd full week of September begin after 0900 if Outfitted guests are present.	A, B (part), C, D
15	WUI, Aspen, Evacuation Route	75	Small tree thin	May 1 – June 14 with no Memorial Day Weekend operations, Labor Day to December 1 From labor Day to 3rd full week of September begin after 0900 if Outfitted guests are present.	A, C, D
16	Evacuation Route, WUI	25	Small Tree Thin may use mechanized method	August 16 – December 1	A, G
17	WUI, Aspen, Evacuation, Fuel Break	120	Commercial Thin	May 1- December1 except small area	A, G (small part)
18	Aspen	25	Pretreat & Rx burn	Not restricted	
19	Evacuation	35	Small Tree Thin may use mechanized method	May 1-December 1	A
20	Evacuation, WUI	32	Commercial Thin	½ May 1 – December 1 and ½ August 16-December 1	A, G (1/2)
21	Evacuation, WUI, Fuel	140	Commercial Thin	August 16-December 1	A, G (part)

Unit #	Purpose For Treatment	Activity Acres the Selected Alternative	Primary Treatment Activity	Operating Period	Applicable timing restrictions
	Break				
22	WUI, Aspen Evacuation Route	45	Small Tree Thin may use mechanized method	Aug 16-December 1	A, G
23	WUI, Aspen Evacuation Route	4 26	Commercial Thin Small Tree Thin	Labor Day – December 1	A, B
24	Evacuation Route, WUI, Aspen	15	Small tree thin	May 1- December 1 (except area within ¼ mile of Rumbaugh)	A, B (part)
25	WUI, Aspen Evacuation	80	Small tree thin	May 1-December 1 (except area within ¼ mile of Rumbaugh Homes)	A, B (part)
26	WUI, Fuel Break, Evacuation	375	Commercial Thin	May 1- December 1	A
27	Evacuation	45	Small Tree Thin may use mechanized method	May 1- December 1	A
29	WUI, Aspen Evacuation	105	Commercial Thin	May 1-June 15 Labor Day-December 1	A, B (part), H
30a	Aspen, WUI	120	Commercial Thin	No restriction except Denny Creek Rd.*	
30b	WUI, Aspen	250	Slash, monitor, prescribed burn	No restriction except West Denny Creek Road*.	A in a small area.
31	WUI, Aspen, Forest Health	111	Commercial Thin	No restriction except West Denny Creek Road*.	
32	WUI, Aspen, Forest	190	Commercial Thin	No restriction except West Denny Creek Road*.	

Unit #	Purpose For Treatment	Activity Acres the Selected Alternative	Primary Treatment Activity	Operating Period	Applicable timing restrictions
	Health				

Restriction:
A = No project activities will be conducted in moose winter range from December 1-May 1. Activities with low disturbance potential such as broadcast and slash burning, and inspections are exempted. Moose winter range includes all units except portions of 30a, and all of 30b, 31, 32.
B = Public safety – within ¼ mile of home no activity on Memorial Day weekend, or from July 4 week through Labor Day.
C = No mechanical treatment would occur in units 14, 15 from June 14 to Labor Day. This time period is the prime operating season for the Firehole Ranch. (Fusselman 2007) The portion of unit 17 on the Watkins drainage side was removed from the treatment unit.

D = From Labor Day to the third full week of September, mechanical treatment operations would be limited to the hours of day after 9 a.m. in units 14, 15. **This restriction would apply when outfitting guests are staying at the Firehole Ranch.**

E = No project activities (commercial logging, understory thinning, etc) <400 meters of an active bald eagle nest from February 1-August 15. Vehicle activity on the Hebgen Lake Road (Forest Road # 167) is exempted.

F = No commercial harvest or understory thinning activities within 400-800 meters of an active bald eagle nest from February 1-August 15. Light activities not involving use of equipment such as sale prep, and vehicle activity on the Hebgen Lake Road (Forest Road # 167) are exempted.

G = No commercial thinning, understory thinning, or prescribed burning <400 meters of an active osprey nest (see map for nest locations) from April 15-August 15. Vehicle activity on the Hebgen Lake Road (Forest Road # 167) is exempted. Units within 400 meters of nest sites include parts of units 4-13, 16-17, 20-22. A map with Osprey nest locations is part of the Migratory Bird Report (Pils 2007d).

H = Invasive weed restriction. No ground disturbing activity during flowering or seed spread which is approximately June 15 –August 30.

* The first mile of the West Denny Creek Road is a groomed snow mobile route and snow plowing is not allowed during winter snowmobile use. There may be other access opportunities to haul logs from these units in the winter but they are limited.

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