

## Upper Clack Thinning (11/28/2007)

### 2.2 Purpose and Need for Action

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The following purposes of this project are derived from the Mt. Hood Forest Plan as amended.

- 2.2.1 Riparian Reserves

One of the purposes of this project is to enhance riparian reserves.

*This action is needed because these plantations occur in riparian reserves and because the current vegetation does not meet the needs of associated aquatic and riparian resources (The Mt. Hood Forest Plan describes this need on p. Four-17 to 20, Northwest Forest Plan Standards and Guidelines p. C-32). If no action is taken in these riparian reserves, stands would have reduced capability to produce the size and quantity of coarse woody debris sufficient to sustain physical complexity and stability of the riparian reserves and associated streams. Plantations can be enhanced by thinning to accelerate the development of mature and late-successional stand conditions.*

- 2.2.2 Late-Successional Reserves

One of the purposes of this project is to enhance late-successional reserves.

*This action is needed because these plantations occur in late-successional reserves and because the current vegetation does not meet the needs of dependent species (The Mt. Hood Forest Plan describes this need on p. Four-67, Northwest Forest Plan Standards and Guidelines p. C-9-21). If no action is taken in these reserves, stands would be delayed in their acquisition of desired habitat characteristics. Plantations can be enhanced by thinning to accelerate the development of mature and late-successional stand conditions.*

- 2.2.3 Diversity

One of the purposes of this project is to enhance diversity.

*This action is needed because these plantations lack certain elements of diversity. They do not have the mix of tree species that were present in the original stand and they are relatively uniform in terms of tree size and spacing. There is a need for greater variability of vertical and horizontal stand structure. There is a need for more sunlight on the forest floor to create greater diversity of ground vegetation and to increase the quantity and palatability of forage plants. (The Mt. Hood Forest Plan describes this need on p. Four-67). If no action is taken, over time the stands would become increasingly dense resulting in a period of low structural diversity that could last more than 100 years. Diversity would continue to decrease if no action is taken. If no action*

is taken, species such as deer and elk that require more open stands for foraging would decline.

- 2.2.4 Health and Growth

One of the purposes of this project is to increase health and growth that results in larger wind-firm trees.

*This action is needed because these second-growth plantations are experiencing a slowing of growth due to overcrowding and some are experiencing suppression caused mortality (The Mt. Hood Forest Plan describes this need on p. Four-91, FW-372 & Four-292). If no action is taken, this overstocked condition would result in stands with reduced vigor and increased mortality. There is a need for forest stands in the matrix that are healthy and vigorous with low levels of mortality.*

- 2.2.5 Forest Products

One of the purposes of this project is to provide forest products consistent with the Northwest Forest Plan goal of maintaining the stability of local and regional economies.

*This action is needed to supply forest products in a cost effective manner. There is a need to keep forests healthy and productive to sustainably provide forest products in the matrix in the future. Not only are forest products needed by society, but also the employment created is important to local and regional economies. (Northwest Forest Plan ROD p. 26, Mt. Hood Forest Plan p. Four-26).*

## 2.3 Land Allocations

The project has many overlapping land allocations. Some units have two or three land allocations on the same ground.

Allocation	Approximate Acres	Units, Comments
Late-Successional Reserves	641	1b, 2a, 7b, 8, 9b, 10b, 14, 15, 16, 17b, 18, 21-28, 32a, 33a, 35-38
Riparian Reserves	253	Virtually all units contain some riparian reserve.
A1 – Wild and Scenic Rivers	127	1b, 14, 15, 16, 36, 38 (all overlap LSR)
B2 - Viewsheds	582	1-5, 7-22, 31, 32a, 35-38
B8 - Earthflow	87	1a, 1b, 2a, 5, 6, 7a, 7b
B10- Winter Range	71	21, 25, 26 (all overlap LSR)
C1 – Timber Emphasis	199	3, 4, 10a, 29, 30, 32b, 32c, 33a, 33b, 34

## 2.4 DESIRED FUTURE CONDITION

The desired future conditions from the **Mt. Hood Forest Plan** (as amended) that are relevant to this proposal are summarized below.

Health	Forest stands have low levels of disease, damaging insect populations and storm damage. Four-92, FW-382; and Four-292, C1-22.
Growth	Forest stands are healthy and vigorous, and have growth rates commensurate with the site's potential (at a rate at which the mean annual increment has not culminated). Four-5, #44; and Four-86, FW-306; and Four-91, FW-372; and Four-90, FW-361.
Riparian & Aquatic	Riparian reserves contain the level of vegetative and structural diversity associated with mature and late-successional stand conditions. They supply coarse woody debris sufficient to sustain physical complexity and stability. They provide connectivity within and between watersheds. The riparian reserve connections provide unobstructed routes to areas critical to fulfilling life history requirements of aquatic and riparian-dependent species. NFP page B-11.
Late-successional Reserves	Late-successional reserves contain sufficient late-successional and old-growth forest ecosystems to meet the habitat needs for species such as the northern spotted owl. NFP page C-11.
Snags & Down Logs	Snags, down logs, and recruitment trees are well distributed across the landscape in sufficient quantity and quality to support species dependent upon these habitats. NFP page C-40.
Deer & Elk	The forest contains a mix of habitats including forage, thermal cover and optimal cover. Four-72, FW-202 to 207.
Landscape Health	Landscapes are healthy and productive and provide a mix of forest and non-forest habitats to support diverse populations of desired plant and animal species. Watersheds provide long-term sustained production of high quality water for fish and for on-Forest and off-Forest water users. Landscapes are actively managed. Four-2 to 5. The project is not within a wildland-urban interface and is not in a high fire hazard landscape.
Invasive Plants	Healthy native plant communities remain diverse and resilient, and damaged ecosystems are being restored. High quality habitat is provided for native organisms. Invasive plants do not jeopardize the ability of the National Forests to provide goods and services communities expect. The need for invasive plant treatment is reduced due to the effectiveness and habitual nature of preventative actions, and the success of restoration efforts. Appendix 1-1, ROD for Preventing and Managing Invasive Plants.
Timber Harvest	Provide forest products consistent with the Northwest Forest Plan goal of maintaining the stability of local and regional economies now and in the future. Timber outputs come primarily from the Timber Emphasis (C-1) portion of the

Levels	Matrix lands, with lesser amounts coming from the "B" land allocations of the Matrix. Minor amounts of timber may also come from Riparian Reserves or Late-successional Reserves where harvesting would be used as a tool to enhance resources and move the landscape toward the desired future conditions. Four-86 & Four-289 & NFP ROD pages 2 & 3.
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## 2.3 Proposed Action

This action is proposed by the Forest Service in collaboration with the Clackamas Stewardship Partners. The intent is to use a stewardship contract to meet the purpose and need. The following sections describe the many ways variability would be introduced into plantations.

### 2.3.1 Variability – Thinning would be conducted to introduce structural diversity through variable spaced thinning. Diversity and variability would be introduced in several ways.

- Leave tree spacing would vary within units and between units.
- Skips and gaps would be created in a variety of sizes. (Skips are areas where no trees would be removed; Gaps are areas where few or no trees would be retained. In gaps, minor tree species would be retained if present.
- Areas of heavy thinning (50 or fewer trees per acre) would be created in a variety of sizes. Heavy thinning is proposed to benefit many species including spotted owls, deer and elk. (The Forest Service has coordinated with the Oregon Department of Fish and Wildlife biologists to determine the best places to do heavy thinning.)
- Leave trees would include minor species.
- Leave trees would include trees with the elements of wood decay.
- All non-hazardous snags would be retained.
- All existing down logs would be retained and key concentrations of woody debris in the older decay classes would be protected.
- Some snags and down logs would be created.

### 2.3.2 Streamside Riparian Reserves - For this project, riparian reserve widths are 180 feet for non-fish-bearing streams and 360 feet for fish-bearing streams. In riparian reserves the thinning would be designed to create conditions suitable for maximum diameter growth to enhance the potential for large wood recruitment and to enhance diversity. The intention is to enhance riparian reserves by accelerating the development of mature and late-successional stand conditions. The proposed treatments would be designed to meet Riparian Reserve objectives with a single thinning entry. Portions of the riparian reserves would be thinned to achieve a conifer relative density of 30. For stands that are less than one mile up stream of listed fish habitat, this RD would apply to the portion of the stand located between the protection buffer and a line that is 180 feet from the stream. For stands that are greater than one mile upstream of listed fish habitat, this RD would apply to the portion of the stand located between the protection buffer and a line that is 100 feet from the stream. The thinning prescriptions within riparian reserves



would maintain an average 50% canopy closure up to one site potential tree height from all streams in order to retain shade-producing vegetation within the secondary shade zone. Other portions of the riparian reserves would be thinned to a relative density of 20 to 35.

**Skips & Gaps** - The protection buffers along streams may be considered skips. Skips would be created outside of protection buffers that would vary in size and would comprise up to 5% of each unit. Gaps would be created within riparian reserves but they would be 100 feet or farther from a stream. Gaps would be 0.1 to 0.25 acre in size and would make up 0-10% of the available riparian component. For units adjacent to listed fish habitat, gaps would have similar size and distribution but would be 180 feet or farther from listed fish habitat.

- 2.3.3 Protection Buffers** – The width of protection buffers may vary from the following minimum widths based on site conditions: Streams adjacent to listed fish habitat would have 100-foot wide buffers (this applies to units 16, 18, 21, 22, 23, 24, 33a, 34 and 38). All other perennial streams and intermittent streams within one mile of listed fish habitat would have 50-foot wide buffers.

Within 50 feet of the stream protection buffers, only low impact harvesting equipment such as, but not limited to, mechanical harvesters or skyline systems, which have minimal ground disturbance would be allowed. Mechanical harvesting equipment would be required to operate on slash-covered paths. Trees in this zone would be directionally felled away from the protection buffers to minimize the disturbance to the forest floor. These requirements would maintain the indicators for sediment, stream temperature, stream bank condition, and large woody material indicators.

- 2.3.4 Other Riparian Reserves** – There are some small seeps and wet areas that are too small to show on maps. Riparian features that are not perennial or intermittent streams such as seeps, springs, ponds or wetlands would be protected by the establishment of protection buffers that incorporate the riparian vegetation. Certain perennially wet features that are habitat for the aquatic mollusks *Lyogyrus* n. sp. 1 or *Juga* (*O.*) n. sp. 2 would be protected by the establishment of 50-foot wide protection buffers. The protection buffers along ponds, seeps and wet areas may be considered skips. Unstable areas that are part of riparian reserves would not be thinned.

- 2.3.5 Late-Successional Reserve** - In late-successional reserves, the thinning would be designed to accelerate the development of mature and late-successional stand conditions and to enhance diversity. The proposed treatments would be designed to meet the LSR objectives with a single thinning entry. Trees would be retained at a relative density of 20 to 40. Where riparian reserves overlap late-successional reserves, the design features for riparian reserves would take priority in the riparian reserve component. In late-successional reserves, trees would not be cut if they are greater than 20 inches in diameter (at a height of 4.5 feet). If larger trees need to be cut for skyline corridors, skidtrails, landings or temporary roads they would be left in place. (The LSR units

contain very few if any trees of that size.) Hardwood trees across a range of size classes would be favored, including large trees that occupy mid-canopy and higher positions.

**Skips & Gaps** - Skips would be created that would vary in size and would comprise a minimum of 10% of each unit. Skips would be 0.25 to 1.25 acres or larger where appropriate based on site-specific features. Where riparian reserves overlap late-successional reserves, the protection buffers adjacent to streams may be counted as skips. Gaps and heavy thins would be created on 3 to 10 % of each unit: Gaps would be 0.1 to 0.25 acre in size would have 6 or fewer trees and heavy thinning (25 to 50 trees per acre) would vary in size from 0.25 acre and larger and would be placed in areas that are predicted to grow quality forage.

**2.3.6 Matrix** - In the matrix, thinning would be designed to increase health and growth that results in larger wind-firm trees and to enhance diversity and forage. Trees would be retained at a relative density of 25 to 35. Adjacent to areas where the LSR is the narrowest, some matrix areas may be managed with relative densities similar to those described in the LSR section.

**Skips & Gaps** - Skips would be created that would vary in size and would comprise up to 5% of each unit. Where riparian reserves cross through matrix, the protection buffers adjacent to streams may be counted as skips. Gaps would be created within matrix; they would be 0.1 to 0.25 acre in size and would make up 0-3% of each unit's matrix component. In addition to these relatively small gaps, larger forage areas would be created with approximately 40 trees per acre. They would be 3 to 5 acres in size and would be placed in areas that are predicted to grow quality forage.

### **2.3.7 Roads –**

In the following sections, the terms obliteration and decommission are used. For this document, the term obliteration is used for temporary roads to describe the type of closure that is standard practice now. After use, temporary roads are bermed at the entrance, decompacted and roughened with the jaws of a loader or excavator, and debris such as rootwads, slash, logs or boulders are placed near the entrance and along the first portion of the road. In this document, the term decommission, is used for Forest Service system roads to describe the process of removing them from the system. They would be treated similarly as described for temporary roads above. Decommissioning may also include the removal of culverts, but for this project, there are no culverts on the roads proposed for decommissioning. Any future change to the status of obliterated or decommissioned roads would require analysis through the NEPA process including public participation and evaluation of environmental effects.

### 2.3.7.1 Temporary Roads

Temporary roads are roads that are built by timber operators to access landings and are closed upon completion of logging until they are needed again. They are not considered part of the Forest's system of permanent roads. The units proposed for thinning are plantations, many of which were accessed by temporary roads during the original clear cut logging. Existing temporary roads were assessed to determine whether they are needed for the current thinning proposal. These existing temporary roads are closed and in some cases have vegetation, brush and trees growing on them. Even though all of the proposed units were clear cut logged before, there are cases where it is not feasible or desirable to use the same roads, landings or logging method used before. To protect residual trees, soil and water, in some cases new temporary roads are proposed to access landings where the existing system roads and old temporary roads do not adequately access the ground.

### 2.3.7.2 Area Accessed by Temporary Roads and Cost

Unit	Road Type	Length Miles	Cost	Acres Accessed
2	existing temp	0.07	560	7.7
3	existing temp	0.05	400	4
5	skid temp	0.03	450	10.4
	new temp	0.01	250	
6	skid temp	0.16	1280	8
7a	new temp	0.11	2750	15.6
7b	skid temp	0.06	900	10
	new temp	0.03	750	
9b	existing temp	0.12	960	6.5
15	existing temp	0.17	1360	29.9
17	existing temp	0.1	800	13.2
19	existing temp	0.1	800	15
20	existing temp	0.11	880	10
21	existing temp	0.05	400	22
22	existing temp	0.05	400	10
23	existing temp	0.1	800	19.3
24	existing temp	0.08	640	11.3
25	new temp	0.05	1250	16.2
	skid temp	0.2	3000	
26	skid temp	0.07	1050	22.2
	new temp	0.15	3750	
27	existing temp	0.11	880	8.6
33a	existing temp	0.04	320	10
34	existing temp	0.30	2400	35.7
37a	existing temp	0.11	880	12.3
	skid temp	0.03	450	6.0
37b	new temp	0.07	1750	4

### 2.3.7.3 System Roads

Many system roads are closed with berms or other devices until they are needed again. They would be temporarily reopened and would be reclosed upon completion of the harvest units they access. These roads and others needed for the project do not require reconstruction but routine blading and brushing to get them ready for use. The table below lists current system roads that are closed and current system roads that are proposed for decommissioning or closure.

Unit	Road Number	Length	Current Status	Proposal
2a	6310178	0.01	Berm	Use and Berm
6	4640021	0.16	Open	Use and Decommission (berm, scarify, water bar, pile debris)
7a	4640163	1.04	Ineffective guard rail	Use and Berm
11	4650013	0.1	Berm-starting to overgrow	Use and Berm
14	4651120	0.32	Ineffective berm, fixed with restoration EA	Use and Berm
16	4671150	0.22	Berm	Use and Decommission (berm, scarify, water bar, pile debris)
17	4671160	2.7	Ineffective berm near Fawn Creek	Use and Berm past quarry (also closes 170)
22	4200560	0.39	Berm	Use and Berm
26	4200500	1.72	Vandalized guard rail	Use and Berm (also closes 504 & 510)
34	4680019	0.18	Berm with light scarification	Use and Decommission (berm, scarify, water bar, pile debris)
36	4680120	0.97	Berm	Use and Berm
37	4680124	1.17	Gate (also closes 125&126)	Use and Berm (also closes 125&126)
38	4680120	0.44	Berm	Use and Decommission the section past unit 37 (berm, scarify, water bar, pile debris)

Some system roads were decommissioned and were taken off the Forest's data base of system roads. Varying treatments were used based on site specific needs for each road. The table below describes what was done to the roads and what is proposed for this project. When decommissioned roads are reused they would be treated very similarly to the way existing temporary roads are treated.

Unit	Old Road Number	Length	Current Status	Proposal
16	4671140	0.09	Decommissioned (berm, very rough surface)	Treat as temporary road, Use and obliterate (berm, scarify, water bar, pile debris)
29	4680026	0.24	Decommissioned (berm, water bars, light scarification)	Treat as temporary road, Use and obliterate (berm, scarify, water bar, pile debris)
30	4680036 4680038	0.41	Decommissioned (overgrown)	Treat as temporary road, Use and obliterate (berm, scarify, water bar, pile debris)
31	4680021	0.18	Decommissioned (berm, water bars, light scarification)	Treat as temporary road, Use and obliterate (berm, scarify, water bar, pile debris)
32a	4680030	0.46	Decommissioned (berm, water bars, light scarification)	Treat as temporary road, Use and obliterate (berm, scarify, water bar, pile debris)



Unit	Old Road Number	Length	Current Status	Proposal
33a	4680029	0.19	Decommissioned (berm, water bars, light scarification)	Treat as temporary road, Use and obliterate (berm, scarify, water bar, pile debris)
35	4680015	0.18	Decommissioned (overgrown)	Treat as temporary road, Use and obliterate (berm, scarify, water bar, pile debris)

Approximately 1.51 miles of old existing temporary roads would be reopened. They would be obliterated upon completion of the harvest units they access.

Approximately 0.55 mile of temporary roads would be constructed on old existing skid trails. They would be obliterated upon completion of the harvest units they access.

Approximately 0.31 mile of new temporary roads would be constructed. They would be obliterated upon completion of the harvest units they access.

Approximately 1.75 miles of old system roads that were decommissioned would be reopened and treated as temporary roads. They would be obliterated upon completion of the harvest units they access.

Approximately 1 mile of system roads would be used and then decommissioned.

Approximately 6.63 miles of system roads that are opened or have ineffective closures would be used and then closed with effective berms.

#### 2.3.7.4 Road Repair and Stabilization

To facilitate safe use, several roads are in need of repair.

4671 Deep patch repairs

4200 Deep patch repairs

In addition, most haul roads would receive road maintenance including ditch and culvert cleaning and brushing. Gravel roads would be bladed and shaped where needed.

### 2.3.8 Unit Table

Unit	Acres	LSR	Ground Based Acres	Skyline Acres	Helicopter Acres
1a	13.2				13.2
1b	14.2	YES			14.2
2a	21.6	YES	7.3	14.3	
2b	2.1				2.1
2c	1.2				1.2
3	22.7		3.1	19.6	
4	34.5		20.6	13.9	
5	31		19.7	11.3	
6	33.8		33.8		
7a	31.2		21	10.2	
7b	18.8	YES	3.3	15.5	
8	6.4	YES	4.4	2	
9a	1.8		1.8		
9b	6.3	YES		6.3	
10a	21.7		21.7		
10b	18.9	YES	18.9		
11	18.7		18.7		
14	32.3	YES	17.8	14.5	
15	29.9	YES	29.9		
16	41.1	YES	41.1		
17a	5.1			5.1	
17b	27.3	YES		27.3	
18	29.4	YES	13.9	15.5	
19	25.8		25.8		
20	23.1		5.6	17.6	
21	42.2	YES	42.2		
22	25.6	YES	25.6		
23	15.4	YES	4.2	11.2	
24	13.3	YES	4	9.3	
25	47.8	YES	47.8		
26	35	YES	20.4	14.5	
27	28.8	YES	28.8		
28	6.2	YES	6.2		
29	30.5		30.5		
30	73.1		73.1		
31	27.5		27.5		
32a	31.7	YES	31.7		
32b	3.2			3.2	
32c	1.4			1.4	
33a	38.9	YES	25.8	13.1	

Unit	Acres	LSR	Ground Based Acres	Skyline Acres	Helicopter Acres
33b	15.2			15.2	
34	35.6		35.6		
35	34.8	YES	34.8		
36	29.1	YES	29.1		
37	25	YES	25		
38	21.4	YES		21.4	
	1093.8	641.4	800.7	262.4	30.7

## Best Management Practices (BMPs) and Design Criteria Common to All Action Alternatives

These are practices that are part of each action alternative. The effects and benefits of these practices are included in the analyses of effects in s. 4. In some cases they are standard practices that are used in all similar projects and in other cases they are specifically tailored to this project based on site-specific factors such as the underlying land allocation and associated standards and guidelines.

### 1. Seasonal restrictions

**1.1 Soils:** No operation of off-road ground-based equipment would be permitted between November 1 and May 31. This restriction applies to the ground-based portions of harvest units. It also applies to ground-based equipment such as harvesters or equipment used for fuels treatment, road construction, road reconstruction or landing construction. This restriction may be waived if soils are dry or frozen or if operators switch to skyline or other non-ground based systems. *This is a BMP and implements Forest Plan standards and guidelines FW-022 and FW-024.*

**1.2 Peregrine Falcon:** No mechanized logging, road building, log loading, yarding, slash piling or other management activities that produce sound above the ambient noise level of the area would be permitted from January 15<sup>th</sup> to July 31<sup>st</sup>. This applies to units 1a and 1b. In addition, if helicopter use occurs below 1500 feet Above Ground Level in units 2a, 2b, 2c, and 3 it would not be permitted from January 15<sup>th</sup> to July 31<sup>st</sup>. These restrictions may be waived if the nest site is unoccupied or if nesting efforts fail and there is not possibility of re-nesting. Documentation of nesting failures can be finalized no earlier than June 30<sup>th</sup> due to the possibility of re-nesting.

**1.3 Deer and Elk Winter Range:** No harvest operations, road construction, use of motorized equipment or blasting would be permitted in Crucial and High

Value winter range areas between December 1 and March 31. Units 14, 15, 16, 17b, 18, 22, 23, 24, 25, 26, 35, 36, 37 and 38 are in the crucial zone.

No log haul or snow plowing would be permitted on the portions of roads 4200500, 4200530, 4640, 4650, 4671, 4680 or 6310 in Crucial Winter Range between December 1 and March 31. Some units must use these haul routes, but for other units, alternate haul routes are available including roads 4200, 4600 and 4670 that have no restriction. *This implements Forest Plan standard and guideline FW-211 and a memorandum of understanding with Oregon Department of Fish and Wildlife.*

- 1.4 **Owls:** Except for hauling and the removal of hazard trees to protect public safety, no activity shall take place within the disruption distance of a known activity center during the March 1 to July 15<sup>th</sup> critical nesting period, unless the habitat is known to be unoccupied or there is no nesting activity, as determined by survey to protocol. The distance and timing may be modified by the unit wildlife biologist according to site-specific information.

Restrictions on chainsaws or heavy equipment use would only apply to small portions of units 27 and 31.

2. **Snags & wildlife trees:** To enhance diversity, variable-density thinning would include the retention of snags and wildlife trees.
- Snags would be retained in all units where safety permits. If snags must be cut for safety reasons they would be left on site.
  - To increase the likelihood that key snags would be retained, they may be included in skips.
  - Certain live trees would also be selected as leave trees that have the “elements of wood decay” as described in the DecAID advisor. This may include trees with features such as dead tops, broken tops and heart rot. They may be retained in skips.
  - If funding becomes available, some live trees would be treated to provide future snags and future cavities. Techniques would vary and may include but would not be limited to topping and inoculation with fungus. **Two to four trees per acre would be treated in LSR units and one to two per acre would be treated elsewhere.** If funding is limited, the LSR units would be the priority.

3. **Down Woody Debris:**

- Old down logs currently on the forest floor would be retained. Prior to harvest, contract administrators would approve skid trail and skyline locations in areas that would avoid disturbing key concentrations of down logs or large individual down logs where possible.
- Additional down woody debris would be generated by the timber sale. This would include the retention of cull logs, tree tops, broken logs and any snags that would be felled for safety reasons.



- If funding becomes available, some trees would be felled or girdled to provide future habitat. **In the LSR units, three to seven trees per acre would be girdled and one to three per acre would be felled. Elsewhere two to three trees per acre would be treated by with either method.** If funding is limited, the LSR units would be the priority. *This implements Forest Plan standards and guidelines as amended.*

4. **Erosion:** To reduce erosion from timber sale activities, bare soils would be revegetated or covered with slash or other debris. Grass seed and fertilizer would be evenly distributed at appropriate rates to ensure successful establishment. Mulch may be used on slopes greater than 20%. Effective ground cover would be installed prior to October 1 of each year. *This is a BMP and implements Forest Plan standard and guideline FW-025.*

To increase forage for deer and elk, erosion control measures would use palatable forage seed mix. Invasive plant species would not be used. *This implements Forest Plan standard and guideline FW-148 and standard 13 of the Regional Invasive Plants Record of Decision.*

**Grass seed** would preferably be certified by the states of Oregon or Washington or grown under government-supervised contracts to assure noxious weed free status. In certain cases, non-certified seed may be used if it is deemed to be free of Oregon State Class A & B noxious weeds. *This implements Forest Plan standard and guideline FW-148.*

When **straw and mulch** are utilized, it would originate from the state of Oregon or Washington fields, which grow state-certified seed, or grown under government-supervised contracts to assure noxious weed free status, or originate in annual ryegrass fields in the Willamette Valley. In certain cases, straw or hay from non-certified grass seed fields may be used if it is deemed to be free of Oregon State Class A & B noxious weeds. *This implements Forest Plan standard and guideline FW-148, and standard 3 of the Regional Invasive Plants Record of Decision.*

5. **Riparian Reserves** – Specific Riparian practices are described in the Alternative section (s. 3.2.1 to 3.2.4). *These are BMPs and implement NFP standards and guidelines, pages C-30-32. They also implement the guidance of the Northwest Forest Plan Temperature TMDL Implementation Strategies (9/9/05). Refer to Fisheries Biological Assessment for details of stream and riparian management.*

6. **Logging Systems** – *These are BMPs and implement Forest Plan standard and guideline FW-022.*

- 6.1 Avoid the use of ground based tractors or skidders on slopes generally greater than 30% and mechanical harvesters on slopes greater than 40% because of the risk of damage to soil and water resources.
- 6.2 Mechanical harvesters and forwarders would be required to work on a layer of residual slash and the operator would place slash in the harvester path prior to advancing the equipment.
- 6.3 In some units, ground-based logging is proposed for areas that have been previously harvested with ground-based systems. Existing temporary roads, landings and skid trails would generally be reused where feasible. There may be instances where it is not desirable to use an existing skid trail and in such cases, if a skid trail is needed in the area, a new skid trail would be located that minimizes the alteration of surface hydrology.
- 6.4 In some units, ground-based logging at the time of the original harvest has resulted in detrimental soil conditions that exceed Forest Plan standards. In these areas there is a greater urgency to reuse existing temporary roads, landings and skid trails. Some new skid trails might be needed as described above, but where detrimental soil conditions exceed 20%, only existing skid trails would be used and only those existing skid trails that do not alter surface hydrology.
- 6.5 Where existing detrimental soil conditions exceed Forest Plan standards, existing temporary roads and landings that are reused, would be obliterated and revegetated.

## **7. Roads – These are BMPs.**

- 7.1 During the wet season, log haul would only be permitted on asphalt and rocked roads when conditions would prevent sediment delivery to streams.
- 7.2 If landings are needed in riparian reserves, they would be located on existing roadways that do not require expansion of the road prism or on existing landings that may require only minimum reconstruction (clearing vegetation, sloping for drainage, or surfacing for erosion control purposes) to be made suitable for use.
- 7.3 The re-opening of old temporary roads is encouraged over the construction of new roads if they are located in areas that would prevent sediment delivery to streams.
- 7.4 Newly constructed roads would not cross or be constructed parallel to stream channels. They would be built on ridge tops, benches, or gentle slopes and only where conditions would prevent sediment delivery to streams.

- 7.5 No road construction is proposed within riparian reserves.
- 7.6 Temporary roads would normally be constructed, used and obliterated in the same operating season. If this is not possible, due to fire season restrictions or other unforeseen delays, the road would be winterized prior to the end of the normal operating season by out-sloping, water-barring, effectively blocking the entrance, seeding, mulching and fertilizing.
8. **Invasive species:** *This implements Executive Order 13112 dated February 3, 1999, and standards and guidelines of the Regional Invasive Plants Record of Decision.*
- All off-road equipment is required to be free of soil, seeds, vegetative matter, or other debris that could contain or hold seeds prior to coming onto National Forest lands. Timber sale contracts and service contracts would include provisions to minimize the introduction and spread of invasive plants. These provisions contain specific requirements for the cleaning of off-road equipment.
  - Gravel or rock used for roads would come from weed free sources.
  - Road blading, brushing and ditch cleaning in areas with high concentrations of invasive plants would be conducted in consultation with invasive plant specialists.
9. **Firewood** would be made available to the public at landings where feasible. *This is an opportunity to contribute to Forest Plan - Forest Management Goal #19, and provide forest products consistent with the NFP goal of maintaining the stability of local and regional economies.*
10. **Monitoring:** *This Implements Forest Plan and NFP monitoring requirements.*

Prior to advertisement of a timber sale, a crosswalk table would be prepared to check the provisions of the Timber Sale Contract and other implementation plans with this document to insure that required elements are properly accounted for.

During implementation, Timber Sale Administrators monitor compliance with the Timber Sale Contract which contains provisions for resource protection including but not limited to: seasonal restrictions, snag and coarse woody debris retention, stream protection, erosion prevention, soil protection, road closure and protection of historical sites.

Post harvest reviews would be conducted where needed prior to post harvest activities such as slash treatment and firewood removal. Based on these reviews, post harvest activities would be adjusted where needed to achieve project and resource objectives.

Monitoring of noxious weeds and invasive plants would be conducted where appropriate to track changes in populations over time and corrective action would be prescribed where needed.

Monitoring is also conducted at the Forest level. For example, water quality is monitored for both temperature and turbidity at several locations across the Forest. Monitoring reports can be found on the Forest's web site at <http://www.fs.fed.us/r6/mthood> under Forest Publications.

5. **Invasive species:** This implements Executive Order 13180 (January 12, 1999) and amendments and guidelines of the Regional Invasive Plant Species Plan. An off-road equipment is required to be 10 ft off road, seeds, vegetative material, or other debris that could cause or hold seeds prior to coming onto National Forest lands. Timber sale contracts and service contracts would include provisions to minimize the impact on and spread of invasive plants. These provisions would include the responsibility for the cleaning of off-road equipment. Ground or rock used for roads would come from local sources. Road blading, brushing and ditch cleaning in areas with high concentrations of invasive plants would be conducted in consultation with invasive plant specialists.

6. **Firewood:** Firewood would be made available to the public at landings where firewood is an appropriate to contribute to Forest Plan - Forest Management Plan. The firewood would be produced from the Forest's own land and would be sold at a reduced price to the public.

7. **Management:** This implements Forest Plan and NPS management requirements. Prior to development of a timber sale, a cross-cut table would be prepared to check the provisions of the Timber Sale Contract and other implementation plans with this document to insure that required elements are fully incorporated. During implementation of Timber Sale 21, Adaptive Management Committee will be the Timber Sale Contract which will be prepared for review and approval. The Timber Sale Contract will be a model for future Timber Sale Contracts and will be used to develop a Timber Sale Contract. The Timber Sale Contract will be a model for future Timber Sale Contracts and will be used to develop a Timber Sale Contract. The Timber Sale Contract will be a model for future Timber Sale Contracts and will be used to develop a Timber Sale Contract.

8. **Forest Plan:** A review would be conducted and revised prior to the Forest Plan. Activities such as plan revision and review and approval of the Forest Plan would be conducted. The Forest Plan would be revised and approved by the Forest Plan Committee and the Forest Plan Committee would be responsible for the Forest Plan.

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## 3.2 Other Alternatives Considered

3.2.1 An alternative was considered that would not construct any new temporary roads. Approximately 78 acres would be switched to helicopter and 1/3 mile of temporary road would not be built. The following is a brief summary of the rationale for not fully developing this option.

- 3.2.1.1 The economic viability of helicopter logging at this time is cost prohibitive given the low value of the timber and the high cost of jet fuel. As with Alternative B, this modified alternative would use a stewardship contract that would use the value of the timber to pay for restoration projects. As with Alternative B, the helicopter units would be separated out into a separate contract so that the high cost of helicopter operations would not negate all of the value available for restoration projects. There is a high probability that these helicopter units would receive no bids. A recent similar helicopter project received no bids.
- 3.2.1.2 This option would result in reduced funds available for achieving important restoration projects.
- 3.2.1.3 Helicopter logging does result in reduced soil impacts compared to ground-based or skyline systems but it can cause other impacts. It would result in increased impacts to snags: snags that might have been considered safe with other logging systems would be felled in a helicopter unit because of the increased hazard of the rotor wash. Helicopters use far more fuel than other logging systems. Helicopter operations are more hazardous than other logging systems. Helicopters are noisier than other logging systems causing disturbance to wildlife and the recreating public.
- 3.2.1.4 Helicopter use makes sense on steep slopes or when the resource impacts of other options are too great. It also makes sense when the value of the timber to be removed is greater than the high cost of helicopter operations. With the proposed action, a helicopter system was proposed for only 30 acres because there were obstacles to other systems including a wet area and a power line. With this "no new roads" option, an additional 78 acres would be considered for helicopter logging. The proposed action did not use helicopter for these 78 acres because the impacts to resources for the proposed logging systems were found to be minimal.
- 3.2.1.5 There is a high probability that helicopter units would receive no bids. If so, the impacts and benefits for those acres would be similar to the no-action alternative.
  - If helicopter thinning does not happen, the associated riparian reserves would have reduced capability to produce the size and quantity of coarse woody debris sufficient to sustain physical complexity and stability of the riparian reserves and associated streams. The plan to accelerate the development of plantations into mature and late-successional stand conditions would not happen.
  - If helicopter thinning does not happen, the associated late-successional reserves (52 acres) would be delayed in their acquisition of desired habitat characteristics. The plan to accelerate the development of plantations into mature and late-successional stand conditions would not happen.
  - If helicopter thinning does not happen, over time the stands would become increasingly dense resulting in a period of low structural diversity that could last more than 100 years. Diversity would continue to decrease and species such as

harvested

deer and elk that require more open stands for foraging would decline. The plan to create diversity in plantations would not happen.

- If helicopter thinning does not happen, the overstocked condition in plantations would result in stands with reduced vigor and increased mortality. The plan to increase health and growth that results in larger wind-firm trees would not happen.
- If helicopter thinning does not happen, no forest products would be removed and there would be no benefit to local and regional economies.

- 3.2.2 The LSR Assessment contains a discussion of goals for coarse woody debris. The goal is to have 10 to 15 percent of the ground covered by down logs five years after harvest. The existing condition for plantations is well below these levels. Achieving these goals with this proposed action is not considered a viable option.

The cost of girdling and felling trees is estimated at up to \$3,900 per acre. There would also be a reduced economic viability of the thinning timber sale because up to 75 additional trees per acre would have to be left after thinning. If the strategy of creating all of the down wood at once were adopted, all of the LSR thinning would become unviable and the units would be deleted from the thinning timber sale, defeating the equally important long-term goal of having large live trees in LSRs. There is no source of funding to accomplish this work outside of the timber sale program.

- 3.2.3 A comment was received suggesting that all snags be protected. All snags will be protected unless they pose a safety hazard. Most of the snags in the plantations are small planted trees that died and these would not likely be considered hazardous.

- Add table in Roads section  
showing additional road decommissioning  
happening in the area