Forested Vegetation Management Direction

Introduction

Opportunities to treat forested vegetation would occur under all alternatives only in those management areas that allow for forested vegetation treatments. The acres listed as opportunities by alternative are potential forested vegetation treatment acres that would likely be proposed in the future to meet the goals and objectives of the alternatives. These opportunities do not constitute a decision to treat any specific area. They are not decadal targets. Site-specific analysis under the *National Environmental Policy Act* (NEPA) process would be required prior to implementation of any ground-disturbing activities. The potential treatment opportunities may change due to catastrophic events or funding levels.

These treatment opportunities were developed to guide the environmental consequences analysis for each alternative. The proposed treatments provide a basis for programmatic guidance for the life of this plan to achieve the goals of the plan and meet the intent of the *HCNRA Act.* The landscape-scale analysis of treatment needs and opportunities would guide HCNRA staff during project planning. The following steps were used to identify the number of acres in need of and available for treatment.

Step 1 – Determination of Historic Range of Variability for Forest Structures

Historic range of variability (HRV) is defined as the natural fluctuation of ecological and physical processes and functions that would have occurred in an ecosystem during a specified previous period of time. In the context of the HCNRA, HRV refers to the range of conditions that are likely to have occurred prior to the settlement of northeastern Oregon by Euro-Americans (approximately 1850). HRV is discussed in this document as a reference point to establish a baseline set of conditions for which sufficient scientific or historical information is available, and enables comparison to current conditions.

In 1995, the Regional Forester for the Pacific Northwest Region issued direction amending the *Forest Plan* directing the Forest to analyze current forest structural stages in the context of HRV on a watershed (5^{th} code hydrologic unit) basis. Opportunities to treat late/old structure stands exist only if the amount of existing late/old structure is within or above the HRV. Other stand structures that exist in the watershed within or above HRV present opportunities to move a portion of those stands into a structural stage that may be deficit. Treatment would also maintain the existing structural stage longer in structures below HRV that otherwise would develop more quickly into the next stage. All treatments would be designed to increase the health, vigor, and resiliency of forested stands.

In addition to structural stages, the HRV analysis depends on stratifying forested vegetation into groups of "biophysical environments" based on plant species and parameters of moisture and temperature. Eight biophysical environment groups are used in this analysis to compare existing forested vegetation structural stages with what may have occurred prior to Euro-American settlement. These biophysical environments are:

Group 1: Alpine fir and lodgepole pine cool-cold/moist	**Group 5:** Douglas-fir warm/dry
Group 2: Alpine fir and lodgepole pine cold/dry	**Group 6:** Douglas-fir warm/moist
Group 3: Alpine fir and lodgepole pine cool/dry	**Group 7:** Ponderosa pine hot/dry
Group 4: Grand fir cool/dry	**Group 8:** Ponderosa pine hot/moist

Another factor in HRV analysis is the dominant disturbance regime. In all of these biophysical groupings, prior to Euro-American settlement, fire is the dominant disturbance regime.

The HRV for the Blue Mountains Ecological Province (which includes Hells Canyon National Recreation Area) is shown in **Table C-8**. The range is shown for each forested structural stage, with the reference point used for analysis denoted in the parenthesis.

Table C-8: Historic Range of Variability for Forested Structural Stages by Biophysical Environment

Biophysical Environment Groups	Structural Stage (%)			
	Very early	Early	Early/late-mid	Late/old
Group 1 --- Alpine fir and lodgepole pine cool-cold/moist	1–10 (10)	5–25 (10)	5-70 (45)	5-70 (35)
Group 2 --- Alpine fir and lodgepole pine cold/dry	1–10 (10)	5–25 (10)	5-70 (45)	5-70 (35)
Group 3 --- Alpine fir and lodgepole pine cool/dry	1–10 (10)	5–25 (20)	5-50(40)	5-60 (30)
Group 4 --- Grand fir cool/dry	1–10 (10)	5–25 (15)	5-50 (50)	5-60 (25)
Group 5 --- Douglas-fir warm/dry	1–15 (10)	5–25 (15)	5-55 (50)	5-55 (25)
Group 6 --- Douglas-fir warm/moist	1–15 (10)	5–25 (15)	10-55 (45)	5-55 (30)
Group 7 --- Ponderosa pine hot/dry	1–15 (10)	5–25 (15)	5-70 (45)	5-70 (30)
Group 8 --- Ponderosa pine hot/moist	1–15 (10)	5–25 (15)	5-70 (40)	5-70 (35)

Step 2 – Definitions of Forested Structural Stages

The following definitions were used in the development of HRV:

Stand – A stand is a spatially continuous group of trees and associated vegetation having similar structures and growing under similar soil and climactic conditions (Oliver and Larson 1990).

Stand structure – The physical and temporal distribution of trees in a stand. The distribution can be described by species, by vertical or horizontal spatial patterns; by size of trees or tree parts, including crown volume, leaf area, stem, stem cross section, and others; by tree ages; or by combinations of the above (Oliver and Larson 1990).

Seral – Refers to the stages that plant communities go through during the progression in structure and composition over time. Development stages have characteristic structure and plant species composition. In a forest, for, example, early-seral forest refers to seedling or sapling growth stages; mid-seral refers to pole or medium saw timber growth stages; and mature or late-seral forest refers to mature and old-growth stages (USDA 2000).

The following is a definition of tree size classes generally used in the Pacific Northwest Region. However, these definitions do not account for species, predominant disturbance regime, and site productivity. Forests in the Pacific Northwest Region east of the Cascade Range generally consider 21 inch diameter breast height (dbh) to be a “large” tree. On cold sites, however, a “large” tree may be 12 inch dbh.

Table C-9: Tree Size Classes

Tree Size Classes	Description
Seedlings	Trees less than 1 inch DBH
Saplings	Trees 1.0 to 4.9 inches DBH
Poles	Trees 5.0 to 8.9 inches DBH
Small trees	Trees 9.0 to 20.9 inches DBH
Medium trees	Trees 21.0 to 31.9 inches DBH
Large trees	Trees 32.0 and greater DBH

Stand Seral/Structural Descriptions

Patterns of species dominance and changes in stand structure are the result of interactions of plants and are emergent properties of tree interactions. The development patterns following a disturbance can be divided into stages: very early, early, early/late-mid, late/old. These are simplified classifications of complex processes. While recognizing that seral/structural stages of stands are complex, these classifications enable land managers to identify the number of acres potentially at risk for major disturbance.

Stage	Description
Very Early	New plants (trees, shrubs, and herbs) grow from seeds, sprouts, advanced regeneration, and other mechanisms injected into the growing space by the death of the previous overstory. Initiates invade a disturbed area for a few years to many decades before the growing space is occupied and the stand enters the stem-exclusion stage of development. The age range when the first invading stems rapidly occupy the growing space and exclude later arriving trees is narrow. Narrow age ranges occur where sites are productive and where species and regeneration mechanisms promote rapid early growth. Broad age ranges develop if the initiates grow slowly and subsequently delay the stem-exclusion stage of development. Inherently poor sites may prolong the initiation phase of development. Given the occurrence of shallow soils, drought, heterotrophic pressures, etc. on a considerable percentage of sites on the eastside, the stand initiation stage may last up to 30 or more years.
Early	After the available growing space is reoccupied, new individuals do not become established successfully. Those plants with a competitive advantage in size or growth pattern are able to expand into growing space occupied by other plants and reduce their growth rate or kill them. The shaded forest floor becomes devoid of living plants and consists of dead leaves, twigs, and stems. The stem-exclusion stage of development is reached at an earlier age on a good site than on a poor site. Unmanaged stands on the eastside may not enter into the stem-exclusion stage of development until the age of 60-80 years. Thinning will delay the onset of the next phase of stand development-stem re-initiation. Managed stands maintained at 55-70 percent of normal stocking for the given age and site will fully occupy the site and inhibit the establishment of a new substrata. Stands displaying good phenotypic characteristics will respond to release and fully occupy the site at ages approaching 120 years.
Early/late-mid	As the overstory grows older, the forest floor substrata, consisting of species capable of establishing in low light intensity high shade begin to develop. Minor disturbances that selectively kill the overstory create available growing space for the establishment of waves of advanced reproduction. Partial overstory removals would emulate natural minor disturbances. The relatively healthy overwood dominates the character of stands in the early-middle stage of stand development. Two or more cohorts (age classes) of trees are present. Overstory trees may be poles or small-medium diameter. Understory may consist of seedlings, saplings, or poles. Understory trees begin to occupy co-dominant positions in the canopy, and understory species can be found in all canopy layers.
Late/old	Forest stands whose structural development incorporates the elements of the late and the old structural stages. The understory species can be found in all canopy layers. Overstory vigor begins to decline, as does tolerance to native pathogens and insects. In the late stage, the understory has become the dominant cover and the overstory is beginning to decline and collapse. In the old stage, all of the relic (pioneering) trees have died and stands consist entirely of trees that grew from beneath. These structural stages may or may not contain the various characteristics sometimes identified with old growth. Structure will vary widely according to forest type, climate, site conditions, and disturbance regime. However, in general, late/old seral stages could reflect any one of the following structures depending on environmental influences: ▪ Multistratum without large trees: in this structure, the overstory canopy is discontinuous. Two or more canopy layers are present. Large trees are uncommon in the overstory. Horizontal and vertical stand structures and tree sizes are diverse. The stand composition may be a mix of seedlings, saplings, poles, or small/medium diameter trees. ▪ Multistratum with large trees: In this structure, medium- and large-diameter trees dominate the discontinuous overstory canopy. Two or more canopy layers are present in which trees of all diameter classes may be present. Horizontal and vertical stand structures and tree sizes are diverse. ▪ Single stratum with large trees: a single-canopy stratum consisting of medium- to large-sized trees dominates the stand structure. One or more age classes of trees may be present. An understory may be absent or consist of sparse or clumpy seedlings or saplings. Grasses, forbs, or shrubs may be present in the understory.

Step 3 – Comparison of Current and Historic Acres

The last step in the process used to identify potential treatment acres compared the current percentages of acres in each seral/structural stage within each biophysical environment in a watershed (5th code hydrologic unit) with the percentages that would have been expected historically (pre-1850) (refer to **Table C-8**). Those seral/structural stages determined to be in excess of the HRV by biophysical environment for the watershed were identified as potentially available for treatment. Further analysis on these potentially available acres identified the number of acres having the highest risk for insect and disease infestations as well as those at greatest risk for high intensity fire.

Conclusion

Completion of these three steps determined the total number of acres potentially at risk. Applying the theme of each alternative and considering the management areas where vegetative treatments would be allowed were the final factors in determining the number of potential acres of forested vegetation treatment by alternative. Further details describing the HRV analysis of structural stages by 5th code watershed are available in the analysis file.

"Late/old Structure" versus "Old Growth"

The term "late/old structure" is used to describe those stands whose structural development incorporates the elements of the late and the old structural stages described above. These structural stages may or may not contain the various characteristics sometimes identified with "old growth". Various definitions of "old growth" exist.

The age at which old growth develops and the specific structural attributes that characterize old growth varies widely according to forest type, climate, site conditions, and disturbance regime. For example, old growth in fire-dependant forest types may not differ from younger forests in the number of canopy layers or accumulation of down woody material. However, old growth is typically distinguished from younger growth by several of the following attributes:

1. Large trees for species and site.
2. Wide variation in tree sizes and spacing.
3. Accumulations of large-size dead standing and fallen trees that are high relative to earlier stages.
4. Decadence in the form of broken or deformed tops or bole and root decay.
5. Multiple canopy layers.
6. Canopy gaps and understory patchiness.

Compositionally, old growth encompasses both older forests dominated by shade-intolerant species, which are fire-dependant, and forests in near climax stages dominated by shade tolerant species. Rates of change in composition and structure are slow, relative to younger forests. Different stages or classes of old growth are recognizable in many forest types.

Sporadic, low to moderate severity disturbances are an integral part of the internal dynamics of many old growth systems. Canopy openings resulting from the death of overstory trees often give rise to patches of small trees, shrubs, and herbs in the understory.

Old growth is not necessarily "virgin" or "primeval". Old growth could develop following human disturbances. The structure and function of an old growth ecosystem is influenced by its stand size and landscape position and context. All "old growth" definitions include tree decadence and down woody material.

The data available for determining the current condition of forested vegetation in the HCNRA comes from the Wallowa-Whitman National Forest Existing Vegetation Database (EVG), and includes information on tree species, sizes, density, and number of canopy layers. These characteristics are sufficient to classify forested stands into all of the seral/structural stages listed above. This information addresses attributes 1, 2, and 4 of the six attributes listed above as distinguishing old growth. It does not address the amount and size of dead standing and fallen trees, the amount of broken or deformed tops or bole and root decay, or canopy gaps and understory patchiness (attributes 3, 4, and 6).

It is expected that disturbance events and natural processes would produce those attributes, but until more information is available, the term "old-growth" is not used. Information specific to EVG can be found in the analysis file or on the Regional Ecosystem Office website (*www.reo.gov*). In the website, click on the Data tab, then click on Forest GIS Data, then click on Wallowa-Whitman National Forest. Refer to the list of files for the Readme.txt file. This file explains all of the files available. The algorithm used to evaluate and classify stands into the seral/structural stages listed above can be found in the analysis file.

Definitions

The Pacific Northwest Region (Region 6) defines "old growth" in terms of dominant species, site productivity, number of canopy layers, diameter, number of trees, tree age, tree decadence, number and size of standing dead trees, and number and size of down woody material. Each potential forested vegetation series has its own definition. The table below lists the definitions for the forested vegetation series found in northeastern Oregon (USDA 1993). This is the late/old structure definition used in the forested vegetation and wildlife sections of this EIS.

Table C-10: Interim Definitions for Old Growth (Region 6)

Vegetation Series	Live Trees						Dead Trees			
	Main Canopy			Variation in Tree Diameters	Tree Decadence	Tree Canopy Layers	Standing		Down	
	DBH	TPA	Age	Yes or No	TPA	Number	DBH	TPA	Diameter	Pieces
White fir/ Grand fir Low & Medium Productivity	21"	10	150	Yes	Yes	2	14"	1	12"	5
White fir/ Grand fir High Productivity	21"	20	150	Yes	Yes	2	14"	1	12"	5
Douglas-fir	21"	8	150	Yes	2	1	12"	1	12"	2
Ponderosa Pine Low Productivity	21"	10	150	Yes	-	1	14"	3	-	0
Ponderosa Pine Medium & High Productivity	21"	13	150	Yes	-	1	14"	3	-	0
Subalpine fir	21"	10	150	Yes	4	2	12"	2	12"	4

DBH – Diameter at breast height – 4 ½' from ground
TPA – Trees per acre
Tree Decadence –TPA with spike or deformed tops, bole or root decay

Old-growth forest stands are complex. While not all criteria can be met in each stand, the large tree component and stand structure (characterized by tree canopy layers) are essential. The presence or absence of adequate snag and down woody material are often the limiting factors. A relatively strict interpretation of the live tree criteria is intended, while more flexibility is accorded the dead tree component.

The *Forest Plan* defines "old growth" as:

- **Ponderosa pine** – The stands will contain at least ten mature to over-mature trees per acre with ponderosa pine or juniper representing 75 percent of the overstory canopy level. Stem size will be 21 inches or greater in the overstory tree layer. Broken-topped trees may be present. Ponderosa pine bark will be furrowed and platy with color ranging from orange to yellow. A minimum of one standing snag, 21 inches or larger, per acre and at least 5 tons of down material including three logs per acre (greater than 9 inches) will be present.

- **Douglas-fir, white fir, spruce** – These stands include both intolerant and tolerant species. The stands will contain at least 15 trees per acre 21 inches or more in diameter, two snags and at least five tons of down material including three downed logs per acre (greater than 9 inches in diameter). Broken-topped trees may be present.

This definition was developed prior to the Region 6 definition, and does not address productivity classes. Forested vegetation series are lumped into ponderosa pine and shade-tolerant species. The Region 6 definitions are more specific.

The Interior Columbia Basin Ecosystem Management Project (ICBEMP) *Supplemental Draft Environmental Impact Statement*, *Appendix 17a* defines "old growth" as (USDA 2000):

> Old-growth forests are ecosystems distinguished by old trees and related structural attributes. Old growth encompasses the later stages of stand development that typically differ from earlier stages in a variety of characteristics which may include tree size, accumulation of large woody material, number of canopy layers, species composition, and ecosystem function.

This definition is not quantitative. It was intended that forests or ecological provinces should use this broad statement to develop definitions appropriate to their area. The Region 6 definition accomplishes this.

Potential Forested Vegetation Treatment Opportunities

As stated at the beginning of this section, acres identified as potentially available for treatment are not decadal targets and do not identify specific areas for treatment. Watershed Assessments have been completed on four of the 5th code watersheds in the HCNRA. The remaining 5th code watersheds would have assessments completed in the next several years. Those completed are Upper Imnaha, Lower Imnaha, Pine Creek, and Big Sheep. Refer to **Chapter 3, Riparian/Aquatic Habitat and Water Quality,** for a map of the location of watersheds. These assessments would identify potential areas for site-specific projects. After these project areas have been identified, appropriate NEPA analysis would be conducted to determine the specific types of treatment, location, and other environmental considerations. For this FEIS, the HRV analysis was conducted on the following management areas within the HCNRA where forested vegetation treatment would potentially be proposed.

Table C-11: Management Areas Where Forested Vegetation Treatment May Occur by Alternative

Alternative A	Alternative B	Alternative E-modified	Alternative W	Alternative N
7, 11	7, 10, 11	7, 10, 11	7, 9, 10, 11	0

Alternative N provides management direction that would provide for treatment of forested vegetation areas within certain limitations; however, no potential forested vegetation treatment is identified because of the cumulative effect of numerous other objectives, standards and guidelines that encourage natural processes and discourage management activity. Refer to **Chapter 3, Forested Vegetation,** for analysis assumptions related to the alternatives.

The following table displays the percentage of acres available for potential treatment by alternative over the next decade.

Table C-12: Percentage of Acres Available for Potential Treatment by Alternative (2003-2013)

Treatment Type	Alternative A	Alternative B	Alternative E-modified	Alternative W	Alternative N
Late/old (single-tree selection)	100%	20%	0%	100%	0%
Early/late-mid (commercial thinning)	50%	25%	70%	100%	0%
Mechanical treatment and underburning	33%	20%	33%	86%	0%
Early (precommercial thinning)	40%	30%*	82%	100%	0%

1For Upper Imnaha, Big Sheep, Pine Creek Warm/Moist, Hot/Dry, Hot/Moist – Alternative W proposes treatment of 64 percent of available acres in the Early/late-mid structure (commercial thinning)
Lower Imnaha – all biophysical environments – Alternative W proposes treatment of 28 percent of available acres in the Early/late-mid structure (commercial thinning).

The following table displays the total potential acres of forested vegetation treatments by alternative for each vegetative treatment over the next decade.

Table C-13: Total Potential Acres of Forested Vegetation Treatment by Alternative (2003-2013)

Treatment Type	Alternative A	Alternative B	Alternative E-modified	Alternative W	Alternative N
Single-tree selection	21,000	7,450	8,200	19,900	0
Commercial Thinning	1,650	1,425	2,550	8,000	0
Mechanical Treatment and Underburn	1,550	950	1,550	4,000	0
Precommercial Thinning	2,400	2,275	5,400	7,100	0
Total	**26,600**	**12,100**	**17,700**	**39,000**	**0**
Percent of forested area treated in a decade (out of approximately 272,144 acres	10%	4%	6%	14%	0
Percent HCNRA area treated in a decade out of approximately 652,488 acres	4%	2%	3%	6%	0

Potential Acres of Treatment by Watersheds and Biophysical Environments

The following tables indicate the potential acres of forested vegetation treatment by watershed, biophysical environment and management areas. The acres are based on structure (late/old, Early/late-mid, and young saplings) and condition (in excess of HRV, highly susceptible to insects and diseases, or in need of precommercial thinning).

Big Sheep Creek (07), Upper Imnaha (09), and Pine Creek (15) Watersheds

The following table describes the forested vegetation structure and condition for the **cool/dry biophysical environment** in the Big Sheep, Upper Imnaha, and Pine Creek watersheds.

Table C-14a: Biophysical Environment – Cool/Dry

Forested Vegetation Structure and Condition	MAs 4,7,10,11,12
Total acres late/old structure:	**23,800**
▪ Acres of late/old structure in excess of HRV	13,300
▪ Acres of late/old highly susceptible to insects and diseases	2,500
Total acres of early/late-mid structure:	**15,050**
▪ Acres of early/late-mid structure in excess of HRV	-5,950
▪ Acres of early/late-mid structure highly susceptible to insects and diseases	1,750
Total acres of young saplings:	**3,130**
▪ Acres of young saplings needing precommercial thinning	3,130

The following table displays potential acres of forested vegetation treatment by **management area** where treatment would be allowed based on the acres in excess of HRV, susceptible to insects and diseases, or in need of precommercial thinning over the next decade.

Table C-14b: Potential Acres of Forested Vegetation Treatment by Management Area (2003-2013)

Forested Structure	MA 7	MA 9	MA 10	MA 11	Total
Late/old structure	180	0	400	1,920	**2,500**
Early/late-mid structure	0	0	0	0	**0**
Young saplings needing precommercial thinning	0	0	170	2,890	**3,060**

The following table displays potential acres of **forested vegetation treatment** by alternative based on the management areas where treatment would be allowed over the next decade.

Table C-14c: Potential Acres of Forested Vegetation Treatment by Alternative (2003-2013)

Treatment Type	Alternative A	Alternative B	Alternative E-modified	Alternative W	Alternative N
Late/old (single-tree selection)	2,100	500	0	2,250	0
Re-entry (single-tree selection)*	11,675	5,850	8,200	11,700	0
Early/late-mid (commercial thinning)	0	0	0	0	0
Mechanical treatment and underburning	0	0	0	0	0
Early (precommercial thinning)	1,150	900	2,450	3,000	0
Total					
Total	14,925	7,250	10,650	16,950	0

*Re-entry – An estimated 11,675 acres located in this watershed grouping in the cool/dry biophysical environment received an initial single-tree/unevenaged management entry cut in between 1978 and 1985. Given the original prescription, the project areas could receive a second entry during the life of the amended CMP. New site-specific analysis would have to be completed before any treatment could occur.

The following table describes the forested vegetation structure and condition for the **warm/dry biophysical environment** in the Big Sheep Creek, Upper Imnaha, and Pine Creek watersheds.

Table C-15a: Biophysical Environment – Warm/Dry

Forested Vegetation Structure and Condition	MAs 4,7,9,10,11,12
Total acres late/old structure:	**8,400**
▪ Acres of late/old structure in excess of HRV	2,780
▪ Acres of late/old highly susceptible to insects and diseases	1,800
Total acres of early/late-mid structure:	**13,140**
▪ Acres of early/late-mid structure in excess of HRV	1,870
▪ Acres of early/late-mid structure highly susceptible to insects and diseases	260
Total acres of young saplings:	**400**
▪ Acres of young saplings needing precommercial thinning	370

The following table displays potential acres of forested vegetation treatment by **management area** where treatment would be allowed based on the acres in excess of HRV, susceptible to insects and diseases, or in need of precommercial thinning over the next decade.

Table C-15b: Potential Acres of Forested Vegetation Treatment by Management Area (2003-2013)

Forested Structure	MA 7	MA 9	MA 10	MA 11	Total
Late/old structure	600	0	650	550	**1,800**
Early/late-mid structure	010	0	230	20	**260**
Young saplings needing precommercial thinning	090	0	180	100	**370**

The following table displays potential acres of **forested vegetation treatment** by alternative based on the management areas where treatment would be allowed over the next decade.

Table C-15c: Potential Acres of Forested Vegetation Treatment by Alternative (2003-2013)

Treatment Type	Alternative A	Alternative B	Alternative E-modified	Alternative W	Alternative N
Late/old (single-tree selection)	1,150	350	0	1,400	0
Early/late-mid (commercial thinning)	25	50	50	100	0
Mechanical treatment and underburn	1,550	950	1,550	4,000	0
Early (precommercial thinning)	75	100	150	200	0
Total					
Total	2,800	1,450	1,750	5,700	0

The following table describes the forested vegetation structure and condition for the **cool/moist, cold/moist, and cold/dry biophysical environment** Big Sheep, Upper Imnaha, and Pine Creek watersheds.

Table C-16a: Biophysical Environment – Cool/Moist, Cold/Moist, and Cold/Dry

Forested Vegetation Structure and Condition	MAs 4,7,10,11,12
Total acres late/old structure:	**1,100**
▪ Acres of late/old structure in excess of HRV	50
▪ Acres of late/old highly susceptible to insects and diseases	315
Total acres of early/late-mid structure:	**1,500**
▪ Acres of early/late-mid structure in excess of HRV	140
▪ Acres of early/late-mid structure highly susceptible to insects and diseases	135
Total acres of young saplings:	**460**
▪ Acres of young saplings needing precommercial thinning	460

The following table displays potential acres of forested vegetation treatment by **management area** where treatment would be allowed based on the acres in excess of HRV, susceptible to insects and diseases, or in need of precommercial thinning over the next decade.

Table C-16b: Potential Acres of Forested Vegetation Treatment by Management Area (2003-2013)

Forested Structure	MA 7	MA 9	MA 10	MA 11	Total
Late/old structure	30	0	110	175	**315**
Early/late-mid structure	0	0	0	135	**135**
Young saplings needing precommercial thinning	0	0	0	460	**460**

The following table displays potential acres of **forested vegetation treatment** by alternative based on the management areas where treatment would be allowed over the next decade.

Table C-16c: Potential Acres of Forested Vegetation Treatment by Alternative (2003-2013)

Treatment Type	Alternative A	Alternative B	Alternative E-modified	Alternative W	Alternative N
Late/old single-tree selection)	50	10	0	50	0
Early/late-mid (commercial thinning)	50	50	100	125	0
Mechanical treatment and underburn	0	0	0	0	0
Early (precommercial thinning)	200	150	400	450	0
Total					
Total	**300**	**210**	**500**	**625**	**0**

The following table describes the forested vegetation structure and condition for the **warm/moist, hot/dry, and hot/moist biophysical environment** in the Big Sheep, Upper Imnaha, and Pine Creek watersheds.

Table C-17a: Biophysical Environment – Warm/Moist, Hot/Dry, Hot/Moist

Forested Vegetation Structure and Condition	MAs 4,7,9,10,11,12
Total acres late/old structure:	**8,650**
▪ Acres of late/old structure in excess of HRV	2,350
▪ Acres of late/old highly susceptible to insects and diseases	4,675
Total acres of early/late-mid structure:	**11,240**
▪ Acres of early/late-mid structure in excess of HRV	1,800
▪ Acres of early/late-mid structure highly susceptible to insects and diseases	3,160
Total acres of young saplings:	**75**
▪ Acres of young saplings needing precommercial thinning	75

The following table displays potential acres of forested vegetation treatment by **management area** where treatment would be allowed based on the acres in excess of HRV, susceptible to insects and diseases, or in need of precommercial thinning over the next decade.

Table C-17b: Potential Acres of Forested Vegetation Treatment by Management Area (2003-2013)

Forested Structure	MA 7	MA 9	MA 10	MA 11	Total
Late/old structure	260	0	1,360	730	**2,350**
Early/late-mid structure	10	0	50	15	**75**
Young saplings needing precommercial thinning	55	0	1,540	200	**1,795**

The following table displays potential acres of **forested vegetation treatment** by alternative based on the management areas where treatment would be allowed over the next decade.

Table C-17c: Potential Acres of Forested Vegetation Treatment by Alternative (2003-2013)

Treatment Type	Alternative A	Alternative B	Alternative E-modified	Alternative W	Alternative N
Late/old (single-tree selection)	1,975	470	0	2,350	0
Early/late-mid (commercial thinning)	200	450	450	1,150	0

Mechanical treatment and underburn	0	0	0	0	0
Early (precommercial thinning)	10	25	50	50	0
Total					
Total	**2,185**	**945**	**500**	**3,550**	**0**

Lower Imnaha (08) Watershed

The following table describes the forested vegetation structure and condition for **all biophysical environments** in the Lower Imnaha Watershed.

Table C-18a: Biophysical Environment - All

Forested Vegetation Structure and Condition	MAs 9,10,11,12
Total acres late/old structure:	**14,280**
▪ Acres of late/old structure in excess of HRV	480
▪ Acres of late/old highly susceptible to insects and diseases	7,225
Total acres of early/late-mid structure:	**38,000**
▪ Acres of early/late-mid structure in excess of HRV	11,100
▪ Acres of early/late-mid structure highly susceptible to insects and diseases	15,475
Total acres of young saplings:	**1,400**
▪ Acres of young saplings needing precommercial thinning	1,400

The following table displays potential acres of forested vegetation treatment by **management area** where treatment would be allowed based on the acres in excess of HRV, susceptible to insects and diseases, or in need of precommercial thinning over the next decade.

Table C-18b: Potential Acres of Forested Vegetation Treatment by Management Area (2003-2013)

Forested Structure	MA 7	MA 9	MA 10	MA 11	Total
Late/old structure	0	335	5	140	**480**
Early/late-mid structure	0	10,000	440	660	**11,000**
Young saplings needing precommercial thinning	0	425	50	930	**1,405**

The following table displays potential acres of **forested vegetation treatment** by alternative based on the management areas where treatment would be allowed over the next decade.

Table C-18c: Potential Acres of Forested Vegetation Treatment by Alternative (2003-2013)

Treatment Type	Alternative A	Alternative B	Alternative E-modified	Alternative W	Alternative N
Late/old (single-tree selection)	2,100	30	0	500	0
Early/late-mid (commercial thinning)	425	300	500	3,075	0
Mechanical treatment and underburn	0	0	0	0	0
Early (precommercial thinning)	365	300	750	1,000	0
Total					
Total	**2,890**	**630**	**1,250**	**4,575**	**0**

Lower Imnaha (02), Upper Joseph (26), Snake River-Rogersburg (53) Watersheds

The following table describes the forested vegetation structure and condition for the **cool/dry, warm/dry, warm/moist, hot/dry biophysical environments** in the Lower Imnaha, Upper Joseph, Snake River-Rogersburg watersheds.

Table C-19a: Biophysical Environment – Cool/Dry, Warm/Dry, Warm/Moist, Hot/Dry

Forested Vegetation Structure and Condition	MAs 9,10,11
Total acres late/old structure:	**8,830**
▪ Acres of late/old structure in excess of HRV	1,650
▪ Acres of late/old highly susceptible to insects and diseases	2,125
Total acres of early/late-mid structure:	**16,300**
▪ Acres of early/late-mid structure in excess of HRV	2,450
▪ Acres of early/late-mid structure highly susceptible to insects and diseases	1,950
Total acres of young saplings:	**2,900**
▪ Acres of young saplings needing precommercial thinning	2,900

The following table displays potential acres of forested vegetation treatment by **management area** where treatment would be allowed based on the acres in excess of HRV, susceptible to insects and diseases, or in need of precommercial thinning over the next decade.

Table C-19b: Potential Acres of Forested Vegetation Treatment by Management Area (2003-2013)

Forested Structure	MA 7	MA 9	MA 10	MA 11	Total
Late/old structure	0	445	215	990	**1,650**
Early/late-mid structure	0	225	725	1,000	**1,950**
Young saplings needing precommercial thinning	0	925	1,175	810	**4,860**

The following table displays potential acres of **forested vegetation treatment** by alternative based on the management areas where treatment would be allowed over the next decade.

Table C-19c: Potential Acres of Forested Vegetation Treatment by Alternative (2003-2013)

Treatment Type	Alternative A	Alternative B	Alternative E-modified	Alternative W	Alternative N
Late/old (single-tree selection)	1,250	240	0	1,650	0
Early/late-mid (commercial thinning)	500	425	1,100	1,750	0
Mechanical treatment and underburn	0	0	0	0	0
Early (precommercial thinning)	325	600	1,100	1,500	0
Total					
Total	**2,075**	**1,265**	**2,200**	**4,900**	**0**

Snake River-Pittsburg (54) Watershed

The following table describes the forested vegetation structure and condition for **all biophysical environments** in the Snake River-Pittsburg Watershed.

Table C-20a: Biophysical Environment - All

Forested Vegetation Structure and Condition	MAs 4,9,11,12
Total acres late/old structure:	**3,640**
▪ Acres of late/old structure in excess of HRV	-3,200
▪ Acres of late/old highly susceptible to insects and diseases	1,735
Total acres of early/late-mid structure:	**16,800**
▪ Acres of early/late-mid structure in excess of HRV	4,425
▪ Acres of early/late-mid structure highly susceptible to insects and diseases	6,220
Total acres of young saplings:	**2,060**
▪ Acres of young saplings needing precommercial thinning	2,060

The following table displays potential acres of forested vegetation treatment by **management area** where treatment would be allowed based on the acres in excess of HRV, susceptible to insects and diseases, or in need of precommercial thinning over the next decade.

Table C-20b: Potential Acres of Forested Vegetation Treatment by Management Area (2003-2013)

Forested Structure	MA 7	MA 9	MA 10	MA 11	Total
Late/old structure	0	0	0	0	**0**
Early/late-mid structure	0	290	0	680	**970**
Young saplings needing precommercial thinning	0	1,550	0	665	**2,215**

The following table displays potential acres of **forested vegetation treatment** by alternative based on the management areas where treatment would be allowed over the next decade.

Table C-20c: Potential Acres of Forested Vegetation Treatment by Alternative (2003-2013)

Vegetation Treatment	Alternative A	Alternative B	Alternative E-modified	Alternative W	Alternative N
Late/old (single-tree selection)	700	0	0	0	0
Early/late-mid (commercial Thinning)	450	150	350	1,800	0
Mechanical treatment and underburn	0	0	0	0	0
Early (precommercial Thinning)	275	200	500	900	0
Total					
Total	**1,425**	**350**	**850**	**2,700**	**0**