

**Mandatory Stewardship Project 001 - Additional Marking to Meet Prescription**

End result is to mark leave trees with orange non-tracer paint to the stocking level and/or other *desired condition* as summarized within the DxPre Table. Designated leave trees shall be marked with (non-tracer) orange paint to Forest Service specifications. Paint is to be supplied by the contractor at their expense. Sufficient quantities of orange paint should be purchased by the contractor to assure color consistency on all treatment units. Black paint is to be used when the contractor adjusts or changes a tree designation. The Contract Administrator will review and approve the marking prior to harvest.

**DxPre Subdivisions (1,095 acres):**

2, 5, 6, 7, 8, 12, 18, 21, 22, 23, 24, 25, 26, 27, 30, 31, 32, 33, 34, 36, 37, 38, 55, 64, 65, 69, 72, 98, and 370.

**Marking Specifications**

The contractor shall mark the entire subdivision. Partial marking of subdivisions is not be permitted.

**Leave Tree Guidelines:**

**Abbreviations:** TPA (trees per acre), PP (ponderosa pine), WL (western larch), DF (Douglas-fir), WP (western white pine), RC (western red cedar), ES (Engelmann spruce), GF (grand fir), WH (western hemlock), AF (alpine fir), LP (lodgepole pine), and PB (paper birch).

**I. Leave Tree Marking:**

- A. The **stump mark** shall be a minimum size of 6 inches long and 2 inches wide. It shall be placed on the downhill side at the base of every leave tree, placed in crevices, and extend onto the forest floor.
- B. A horizontal **band** at least 2" wide must encircle the tree between 5' and 7' above the ground.
- C. Paint marks shall be visible for a distance of at least 25' in all directions until harvest operations are complete.
- D. Leave tree marking applies to conifer trees  $\geq 7.0$ " dbh. All hardwood trees shall not be marked.

**II. Leave Trees to Mark:**

- A. ALL live trees having a dbh  $\geq 21.0$ ".
- B. ALL live trees of the species designated as "leave all" within Col. 3 of the DxPre Table.
- C. ALL trees that have a tin can, glass jar, plastic jar, or a single pink ribbon wrapped around or on the bole of tree.
- D. To meet the Stocking Level in the DxPre Table, first leave trees defined as Most Desirable (C1) followed by Less Desirable (C2). All mandatory leave trees, and hardwood trees, count toward the Stocking Level. See Section III for a description of conditions where the Stocking Level does not apply.

C1. Most Desirable Leave Trees/Suitable: Trees that possess the following characteristics shall be the first choice for desirable leave trees:

1. *Dominant and Co-dominant Preferred Species:* These trees are taller on the average when compared to other trees in the unit that are in the *intermediate* and *suppressed* crown classes. The Preferred Species are in order of preference PP, WL, WP, DF, and RC. RC and DF are not a preferred species in areas *dominated by PP*. When the preferred species

does not possess desirable tree characteristics, *vigor/growth* is given preference.

2. Health: With the exception of WL and WP, foliage shall be dark green in color. The crown shall cover one third or more of the tree all the way around it. Healthy trees are free of *severe insect or disease problems* and are not stressed. Use Figure B-1 to help assess crown health.
3. Free of Physical Damage: Trees shall not have physical damage from operations, fire, animals or weather on more than one-fourth of the circumference of the bole, or more than three feet of length of the bole.
4. Up to 5 Wildlife Trees per acre having a dbh  $\geq 16.0$ ": Wildlife trees are greater than 40% cull due to heart rot, broken tops, dead tops, forks, and/or bird holes.

**C2. Less Desirable Leave Trees (also suitable):** When the average basal area of most desirable leave trees cannot be achieved with trees that possess the most desirable characteristics, select trees with less desirable characteristics in the priority listed below:

1. Minor Defect: Preferred species with minor defect such as a minor crook, a small amount of animal damage, or mistletoe < *Hawksworth rating* 3.
2. Dominant and co-dominant ES, WH, & GF (in order of preference) having desirable tree characteristics.
3. Other Live Trees: Trees other than insect or disease damaged trees with at least a 30% *live crown ratio* and *height to diameter ratio*  $\leq 1:100$ . Species preference for Other Live Trees in order of preference is PP, WL, WP, DF, RC, ES, WH, GF, AF, LP.
4. Physical Damage: Trees that have physical damage on less than half the bole circumference and less than three feet in length. Physical damage may be caused by equipment, falling trees, lightning, wind, animals, etc.

### III. Stocking Level: Areas Where the Stocking Level does not Apply

- A. The Stocking Level does not apply to Gaps (described in section V, A, B, C).
- B. The Stocking Level does not apply to areas with *natural low stocking*.
- C. The Stocking Level does not apply to areas with *abundant trees* specified as "do not leave" in Col. 3 of the DxPre Table.
- D. All suitable trees shall be retained within areas of natural low stocking and areas with abundant trees specified as "do not leave" in Col. 3 of the DxPre Table.

### IV. Stocking Level: Areas Where the Stocking Level Applies

- A. The Stocking Level applies to all areas, except as described in Section III.
- B. Mandatory leave trees (Section II, A, B) and hardwood trees count toward the Stocking Level.
- C. The average Stocking Level specified in the DxPre Table shall be within the range specified.

- D. For units showing a range in Stocking Level in Col. 5 of the DxPre Table (example 60-80 ft<sup>2</sup> BA/ac), leave the high end of the Stocking Level when there are enough available Most Desirable Trees (C1) to meet the high end of the range and graduate to the low end of the Stocking Level as more of the leave basal area is made of Less Desirable Leave Trees (C2).
- E. The density may vary by up to 50% to allow for the selection of the Most Desirable trees; this is acceptable providing that the Most Desirable trees are retained and the average Stocking Level is met. For example, where the Stocking Level is 60-80 ft<sup>2</sup> BA/ac, the density may vary between 30-120 ft<sup>2</sup> BA/ac as applicable.
- F. In areas with mandatory leave trees (described in Section II., A, B), the Stocking Level may be higher than the variance provided in Section IV, E. These areas shall count towards the Stocking Level target.

**V. Gaps: Do Not Mark leave trees described in A-C below: These are unsuitable trees.** However, an exception shall be made for mandatory leave trees (II. A, B) and as specified in B and C below.

- A. Yellow-paint gap:** Do not mark live conifer trees within 50 feet (+10%) of trees marked with yellow paint as specified in Col. 4 of the DxPre Table.
- B. Large PP gap:** Do not mark live conifer trees, except Most Desirable PP/WL, within the distance (+10%) of large PP as specified in Col. 4 of the DxPre Table.
- C. Aspen and/or Birch gap:** Do not mark live conifer trees, except Most Desirable PP/WL, within the distance (+10%) of *Aspen clones or Birch clumps* specified in Col. 4 of the DxPre Table.

**DxPre Table** (see unit comments on next page)

Subdivision No. (Col 1)	Acres (Col 2)	Specifications see Section II, B (Col 3)	Gaps see Section V (Col 4)	Stocking Level see Section IV (Col 5)
All	All	ALL live trees having a dbh > 21.0", or stump diameter of > 26.0" when measured at 4 inches on the uphill side of the stump.	All trees with yellow paint shall be left standing	Section III describes conditions where the stocking level does not apply. Follow the tree selection criteria in Section II.
2	22	Do <u>not</u> leave LP	NA	60 ft <sup>2</sup> BA/ac. (+ 10%)
5	17	NA	NA	60-80 ft <sup>2</sup> BA/ac.
6	12	NA	Aspen - 50 feet	60-80 ft <sup>2</sup> BA/ac.
7	20	Species designation: Leave all ES / WL	Aspen - 50 feet	40 ft <sup>2</sup> BA/ac. (+ 10%)
8	16	NA	NA	60 ft <sup>2</sup> BA/ac. (+ 10%)
12	50	Species designation: Leave all WL, DF, PP, AF, ES, RC	NA	5 TPA of LP
18	15	Species designation: Leave all ES	NA	50 ft <sup>2</sup> BA/ac.
21	54	Do <u>not</u> leave LP	Aspen - 50 feet	60-90 ft <sup>2</sup> BA/ac
22	40	NA	NA	70-80 ft <sup>2</sup> BA/ac.
23	34	NA	NA	70-80 ft <sup>2</sup> BA/ac.
24	34	NA	Large PP - 50 feet	60-90 ft <sup>2</sup> BA/ac.
25	20	NA	Aspen - 50 feet Large PP - 50 feet	60-90 ft <sup>2</sup> BA/ac.
26	24	NA	Aspen - 50 feet Large PP - 50 feet	60-90 ft <sup>2</sup> BA/ac
27	11	Species designation: Leave all PP / WL	NA	60 ft <sup>2</sup> BA/ac. (+ 10%)
30	43	Species designation: Leave all ES / PP	Aspen - 50 feet Large PP - 40 feet	80 ft <sup>2</sup> BA/ac. (+ 10%)
31	56	NA	Aspen - 50 feet Large PP - 40 feet Yellow Paint- 50 foot radius	60-90 ft <sup>2</sup> BA/ac.
32	24	Species designation: Leave all ES / PP	NA	80 ft <sup>2</sup> BA/ac. (+ 10%)
33	31	NA	Aspen - 50 foot radius Large PP - 50 foot radius	60-70 ft <sup>2</sup> BA/ac.

Subdivision No. (Col 1)	Acres (Col 2)	Specifications see Section II, B (Col 3)	Gaps see Section V (Col 4)	Stocking Level see Section IV (Col 5)
All	All	ALL live trees having a dbh > 21.0", or stump diameter of > 26.0" when measured at 4 inches on the uphill side of the stump.	All trees with yellow paint shall be left standing	Section III describes conditions where the stocking level does not apply. Follow the tree selection criteria in Section II.
34	106	NA	Aspen - 50 foot radius Large PP - 40 foot radius Yellow Paint- 50 foot radius	60-90 ft <sup>2</sup> BA/ac.
36	42	NA	Large PP - 40 foot radius	60-70 ft <sup>2</sup> BA/ac.
37	39	Species designation: Leave all PP Do not leave GF	Large PP - 50 foot radius	60-90 ft <sup>2</sup> BA/ac.
38	22	Do not leave LP, GF	NA	40 ft <sup>2</sup> BA/ac. (+ 10%)
55	16	NA	NA	40-50 ft <sup>2</sup> BA/ac.
64	10	Do not leave LP	NA	60 ft <sup>2</sup> BA/ac. (+ 10%)
65	45	Species designation: Leave all PP Do not leave LP	Yellow Paint- 50 foot radius	60 ft <sup>2</sup> BA/ac. dry forest 100 ft <sup>2</sup> BA/ac. RC overstory
69	22	Species designation: Leave all PP	NA	60 ft <sup>2</sup> BA/ac. (+ 10%)
72	233	Species designation: Leave all PP	Aspen - 50 foot radius Yellow Paint- 50 foot radius	60-90 ft <sup>2</sup> BA/ac.
98	25	Species designation: Leave all PP	NA	60-90 ft <sup>2</sup> BA/ac.
370	12	Species designation: Leave all PP Do not leave GF	Large PP - 50 foot radius	60-90 ft <sup>2</sup> BA/ac.

**Unit Comments**

Unit 7	To the extent practicable, leave trees as a mix of individual trees and clumps of 2-9 trees.
Unit 12	To the extent practicable, leave LP trees as a mix of individual trees and clumps of 2-9 trees.
Units 33, 36	Leave all WL trees.
Unit 38	Do not leave WL trees with dwarf mistletoe ratings 2 or higher.
Unit 55	To the extent practicable, leave uneven spacing by leaving trees as a mix of individuals, small clumps (2-4 trees), and medium clumps (5-9 trees).
Unit 65	RC overstory applies to areas within the unit that have abundant cedar in the overstory. Dry forest applies to all other portions of the unit outside of "RC overstory".
Unit 69	To the extent practicable, leave an average of 3 clumps / ac. of 5-9 trees.

Subdivision No. (Col 1)	Acres (Col 2)	Specifications see Section II, B (Col 3)	Gaps see Section V (Col 4)	Stocking Level see Section IV (Col 5)
All	All	ALL live trees having a dbh > 21.0", or stump diameter of > 26.0" when measured at 4 inches on the uphill side of the stump.	All trees with yellow paint shall be left standing	Section III describes conditions where the stocking level does not apply. Follow the tree selection criteria in Section II.
Unit 94	To the extent practicable, leave uneven spacing by leaving trees as a mix of individuals, small clumps (2-4 trees), and medium clumps (5-9 trees)			
Unit 98	To the extent practicable, leave an average of 3 clumps / ac. of 5-9 trees.			

## Definitions

Abundant: Where cutting all of the conifer species designated as "do not leave" would result in a Stocking Level below the specified level in Col. 5 of the DxPre Table even without harvesting any other trees.

Aspen Clone: Three (3) or more live aspen trees greater than 5.0 inches DBH with boles that are within 15 feet of each other.

Basal Area: The cross-sectional (sq ft) area of trees measured at DBH.

Birch Clump: Three (3) or more live birch trees greater than 5.0 inches DBH with boles that are within 15 feet of each other.

Clumps: two or more leave trees with boles within 15' of one another.

### Crown Classes:

- **Codominant** a tree whose crown helps to form the general level of the main canopy in even-aged stands or, in uneven-aged stands, the main canopy of the tree's immediate neighbors, receiving full light from above and comparatively little from the sides.
- **Dominant** a tree whose crown extends above the general level of the main canopy of even-aged stands or, in uneven-aged stands, above the crowns of the tree's immediate neighbors and receiving full light from above and partial light from the sides.
- **Intermediate** a tree whose crown extends into the lower portion of the main canopy of even-aged stands or, in uneven-aged stands, into the lower portion of the canopy formed by the tree's immediate neighbors, but shorter in height than the codominants and receiving little direct light from above and none from the sides.
- **Suppressed** (overtopped) a tree whose crown is completely overtopped by the crowns of one or more neighboring trees – note the vigor of overtopped (suppressed) trees varies from high to low depending on individual circumstances.

Dominated by Ponderosa Pine: areas where over 50% of the basal area is in ponderosa pine.

Hawksworth Mistletoe Rating: Divide the crown of the tree into 3 sections. Rate each section for presence of mistletoe. The sum of the sections equals the Hawksworth Mistletoe Rating. Figure B-2 provides an example.

Height to Diameter Ratio: The relationship between dbh and height. Trees that are overly tall for their diameter size generally have a poor height to diameter ratio. These trees usually bend over once nearby trees have been removed. A 50' height and 6" dbh is 100:1 ratio.

Large PP: large ponderosa pine are trees over 21.0" dbh.

Live Crown Ratio: the ratio of crown length to total tree length.

Natural Low Stocking: areas within a unit that prior to harvest have less than the Stocking Level (DxPre Table Col 5) due to poor site conditions (e.g. rocky soil, brush) or insect- and/or disease-related mortality.

Severe insect or disease problems:

- **Dwarf mistletoe** - Trees with dwarf mistletoe in more than half the crown (Hawksworth rating 3 or greater). Brooms, cankers, and swellings on stems and branches are indicators of mistletoe. Mistletoe is common in western larch and Douglas-fir. Epicormic branches are not to be confused with dwarf mistletoe.
- **Root disease** - Trees showing symptoms of root disease should be removed. Frequently, these trees are Douglas-fir near root disease centers (an area of dead, broken off trees). Indicators of root disease include a white fungus growing between the bark and the wood, resin flow at the base of the tree and/or a lighter color crown with fewer needles, (when compared to other Douglas fir in the area) and fading crowns and/or sap flow from the bole of Douglas-fir, grand fir, and subalpine fir.
- **Blister rust** - Symptoms of blister rust include heavy resin flow on the stem from a diamond shaped wound, dead branches and/or a dead top. Blister Rust is common in western white pine.
- **Scolytus** - Grand fir or subalpine fir with scolytus scars on both sides of the tree.
- **Bark beetles** - Numerous pitch tubes where beetles have bored into tree. Symptoms of mountain pine beetles are small red to yellowish pitch tubes (less than one-fourth inch) and boring dust (frass) in bark crevices and round the base of the tree.

Vigor/Growth: Relative health and growth of forest trees. Leave-tree preference shall favor trees possessing relatively high vigor/growth, free of disease and defect over trees with relatively poor vigor and growth, regardless of specie preference. For example, a RC with a relatively healthy crown will be favored over and a similarly-sized DF with an unhealthy crown (i.e. faded, yellowing). If the two trees possessed similar vigor/growth characteristics, the DF shall be the preferred leave tree.

Figure B-1. Artwork by Robert Van Pelt 2008. Provided as an example only.

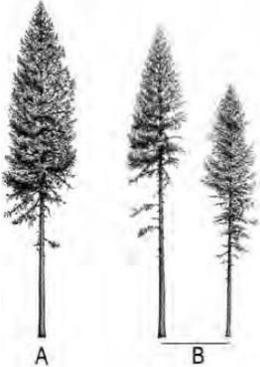
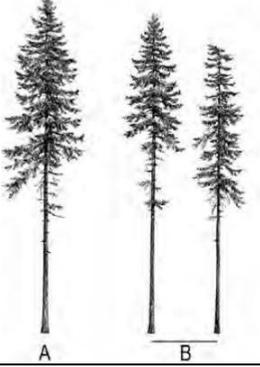
	DESIRABLE LEAVE TREES	UNHEALTHY TREES
Ponderosa pine	 <p>A B</p>	 <p>D</p>
Western larch	 <p>A B</p>	 <p>D</p>
Douglas-fir	 <p>A B</p>	 <p>D</p>
<p><b>NOTE:</b> use this artwork along with other characteristics as an aid to assess vigor and crown health. Artwork not available for other species.</p>		

Figure B-2. Hawksworth dwarf mistletoe rating system.

### Instructions

STEP 1. Divide live crown into thirds.

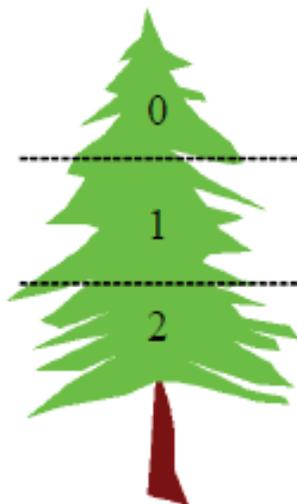
STEP 2. Rate each third separately.

Each third should be given a rating of 0, 1 or 2 as described below.

- (0) No visible infections.
- (1) Light infection (1/2 or less of total number of branches in the third infected).
- (2) Heavy infection (more than 1/2 of total number of branches in the third infected).

STEP 3. Finally, add ratings of thirds to obtain rating for total tree.

### Example



If this third has no visible infections, it's rating is (0)

If this third is lightly infected, it's rating is (1)

If this third is heavily infected, it's rating is (2)

The tree in this example will receive A rating of  $0+1+2=3$ .

**Mandatory Stewardship Project 002 - Subsoiling Acres: 20**

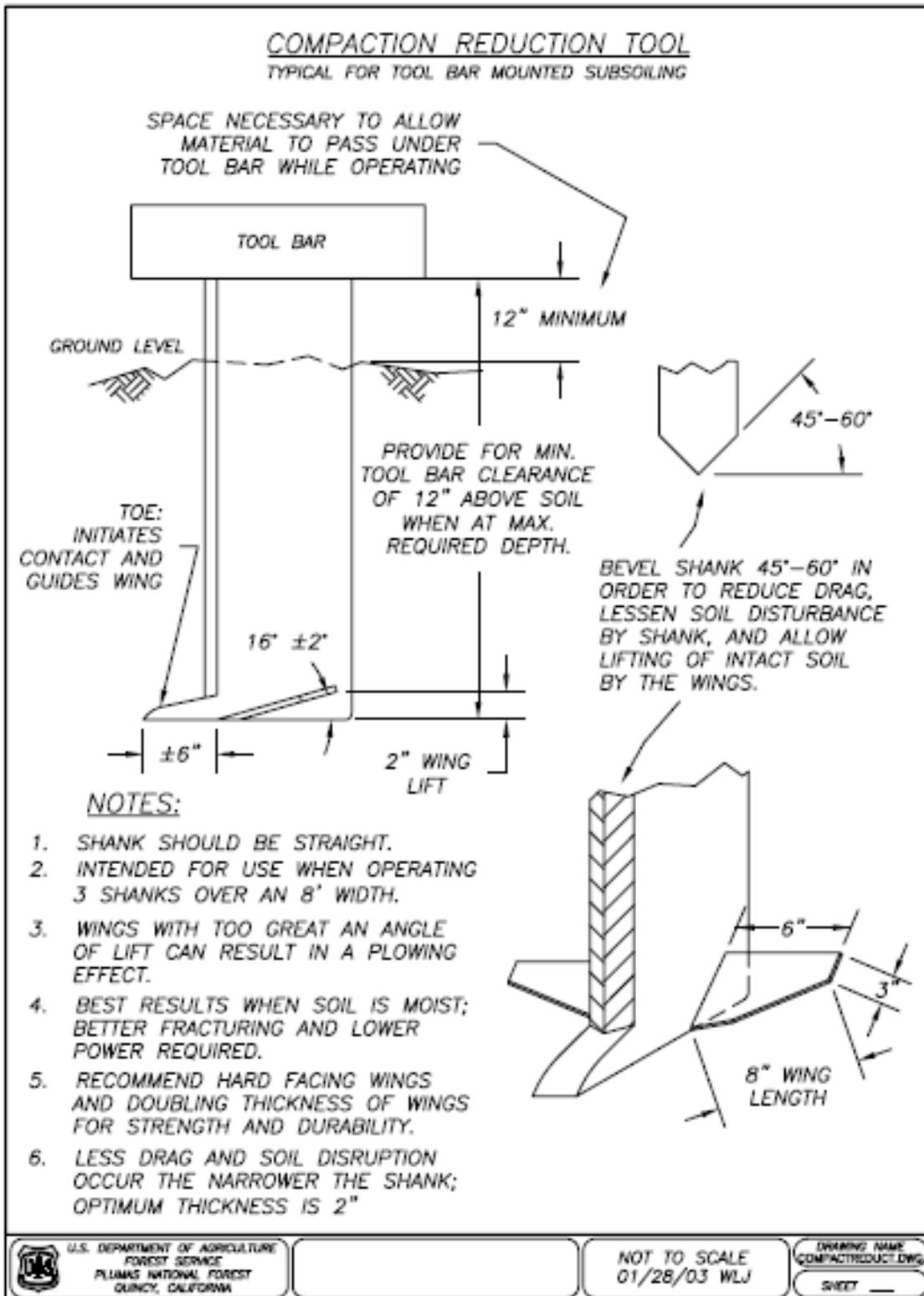
The end result is to reduce detrimental soil compaction across skid trails, temporary roads, and landings, introduce the placement of slash and course woody debris, reduce soil erosion, and facilitate recovery of soil processes. De-compaction will occur on areas of legacy compaction as well as areas compacted during current operations.

Forest Service will approve the Contractor's subsoiling compaction reduction tool (subsoiler) prior to the start of work.

**Subdivisions requiring de-compacting: 2, 15**

End results specific requirements:

1. De-compacting should occur to a depth of at least 20 inches on landings and temporary roads, and to a depth of at least 16 inches on main skid trails.
2. De-compacting of landings should occur on contour to minimize erosion potentials.
3. De-compacting on temporary roads and main skid trails must be done in such a way as to not create furrowed trenches greater than 8" in depth.
4. De-compacting will not occur on slopes greater than 18%.
5. De-compacting will occur at proper soil moisture content (approximately 1/3 of field capacity, as determined by the Contract Administrator, to allow lateral and vertical shattering, minimize soil disturbance, and increase effectiveness.
6. Slash will be placed on areas treated after de-compaction is completed and in such a way as to not re-compact the ground being de-compacted. Skid trails are to be covered to 50% soil cover/slash.



**Mandatory Stewardship Project Number 003 - Mastication Mechanical Understory Thinning, Acres: 407**

The end result of treatment is to reduce ladder fuels and increase tree vigor to develop sustainable forest stands. The CAM identifies the locations for understory thinning treatments.

Understory thinning treatments are to be completed post-harvest through mechanical mastication.

1. Understory Thinning Treatments: Mechanical Mastication units. Acres: 407  
Subdivisions: 7, 8, 9, 23, 29, 35, 36, 37, 38, 56

Specific requirements:

1. Residual conifer regeneration averaging 90 trees per acre (TPA). This average TPA may be achieved through 22 x 22 foot spacing. Spacing may vary by up to 50% to allow for the selection of desirable leave trees provided that the average TPA is met and the low end of the spacing variance is not applied uniformly.
2. Desirable leave trees possess good growth and vigor, using the following species preference when applicable ponderosa pine, western larch, Douglas-fir, western red cedar.
3. Retain existing levels of large coarse woody debris and snags.
4. Cut all conifer regeneration, except for western white pine, within 50' ( $\pm$  5 feet) of aspen.
5. Slash created from understory thinning treatments will be discontinuous with a fuel bed height less than 2 feet above the ground including natural obstacles, while avoiding heavy accumulations adjacent to residual leave trees.
6. Conifer regeneration is defined as trees between 3 feet in height and a DBH less than 7.0 inches.

Direction common to all units:

1. Retain all aspen, cottonwood, and western white pine.
2. No designated leave trees will be cut.
3. Mastication/mechanical: Equipment will be allowed one pass across units.
4. Trees showing signs of disease or insect attack are higher priority for removal regardless of species preference.
5. In root disease pockets, favor species that are more resistant, i.e. western larch, ponderosa pine, western red cedar.
6. Conifer regeneration selected for cutting will not have stumps exceeding 12 inches and will be cut below the lowest live limb.
7. Where Douglas-fir, western larch and lodgepole pine overstory trees are infected with mistletoe, no leave trees of the infected species shall be selected within a 50-foot radius ( $\pm$  5 feet) of the infection source, if there are other acceptable disease free tree species available.

**Mandatory Stewardship Project 004 - Site Prep Understory Thinning.**

**Acres: 292**

The end result of this treatment is to reduce understory competition, to promote regeneration of desirable tree species, and site preparation for tree planting. The CAM identifies the locations for understory thinning treatments.

Understory thinning treatments shall be completed post-harvest operations through mastication or hand thinning with chainsaws.

1. Site Prep Understory Thinning Treatments: Mastication with equipment or hand thinning with chainsaws. Acres: 277, Subdivisions: 2, 10, 12, 15, 21, and 28
2. Site Prep Understory Thinning Treatments: Hand thinning with chainsaws required. Acres: 15, Subdivision: 18

End results specific requirements:

1. Cut trees shall be between 1 foot in height and a DBH less than 5.0 inches.
2. Retain existing levels of large coarse woody debris and snags.
3. Cut all conifer regeneration within 50' (+ 5') of aspen clumps.
4. Lop and scatter required when slash accumulations exceed 2 feet in depth. Slash will be cut into lengths of 5 feet or less.
5. Retain all healthy disease free Douglas-fir regeneration in units: 10, 12, 15.
6. Residual conifer regeneration averaging 134 trees per acre (TPA). This average TPA may be achieved through 18 x 18 foot spacing. Spacing may vary by up to 25% to allow for the selection of desirable leave trees provided that the average TPA is met and the low end of the spacing variance is not applied uniformly.

A. Selection of Leave Trees

Leave trees shall generally be those demonstrating the most vigor/greatest health, tallest height, largest crown, and straightest stems that are free of damage due to insects, disease, physical, or mechanical causes. The Contractor shall select leave trees in the following priorities:

1. Dominant and Co-dominant Preferred Species: These trees are taller on the average when compared to other trees in the unit that are in the intermediate and suppressed crown classes. The Preferred Species are in order of preference PP, WL, WP, DF and WRC. RC and DF are not a preferred species in areas dominated by PP. When the preferred species does not possess desirable tree characteristics, vigor/growth is given preference.
2. Health: With the exception of WL and WP, foliage shall be dark green in color. The crown shall cover one third or more of the tree all the way around it. Healthy trees are free of severe insect or disease problems and are not stressed. Use Figure B-1 to help assess crown health.
3. Free of Physical Damage: Trees shall not have physical damage from fire, animals or weather on more than one-fourth of the circumference of the bole or more than three feet of length of the bole.
4. All snags are designated to leave; however, they shall not be counted as leave trees for payment purposes.
5. No tree with visually detectable mistletoe shall be left as a leave tree.

6. If there are any natural or manmade openings, or openings created by cutting cull trees, which are greater than or equal to twice the spacing distance, additional trees may be left around the opening. Spacing shall not be less than 10 x 10 feet. These additional leave trees must meet the specifications for the desired leave trees described herein. The crowns of adjacent trees must be receiving nearly full exposure to sunlight.

B. Less Desirable Leave Trees also Suitable: When the average basal area of most desirable leave trees cannot be achieved with trees that possess the most desirable characteristics, select trees with less desirable characteristics in the priority listed below:

1. Dominant and co-dominant ES, WH, & GF (in order of preference) having desirable tree characteristics.

C. Stump Height - Removal of Live Limbs. All trees other than leave trees shall be cut below the lowest live limb, except when prevented by natural obstacles; in which case, any live limbs below the cutting point shall be removed. Trees shall be completely severed from the stump. Stump height shall be a maximum of 6 inches above ground and 4 inches above natural obstacles.

D. Felling. Cut trees shall be felled away from unit boundaries, roads, telephone lines, established trails, stock driveways and trails, fence lines, established land corners, superior trees, dispersed camp sites, and live or intermittent streams. Any trees falling on such areas shall be removed as specified elsewhere herein.

Direction common to all Site Prep Understory Thinning units:

1. Retain all aspen and cottonwood. Western larch and western white pine are to be retained unless within 50' (+/- 5') of aspen clumps. Trees showing signs of disease or insect attack are higher priority for removal regardless of species preference.
2. In root disease pockets, favor species that are more resistant, i.e. western larch, ponderosa pine, western redcedar.
3. In areas where overstory trees are infected with dwarf mistletoe, understory trees of the same species are considered as low priority for retention within 50 (+ 5') of the infected overstory tree.
5. Moderate to severely damaged trees caused by logging are a high priority for removal regardless of species.
6. Where mastication/mechanical methods are used, equipment will be allowed one pass across units.
7. All trees other, than leave trees, shall be cut below the lowest live limb, except when prevented by natural obstacles; in which case, any live limbs below the cutting point shall be removed. Trees shall be completely severed from the stump. Stump height shall be a maximum of 6 inches above ground and 4 inches above natural obstacles.
8. Cut trees shall be felled away from unit boundaries, roads, telephone lines, established trails, stock driveways and trails, fence lines, established land corners, superior trees, dispersed camp sites, and live or intermittent streams. Any trees falling on such areas shall be removed as specified elsewhere herein.

**Mandatory Stewardship Project Number 005 - Chainsaw Hand Understory Thinning,  
Acres: 26**

The end result of treatment is to reduce ladder fuels and increase tree vigor to develop sustainable forest stands. The CAM identifies the locations for understory thinning treatments.

1. Understory Thinning Treatments: Hand thinning with chainsaws required units.  
Acres: 26  
Subdivisions: 1, 370

Specific requirements:

1. Residual conifer regeneration averaging 90 trees per acre (TPA). This average TPA may be achieved through 22 x 22 foot spacing. Spacing may vary by up to 50% to allow for the selection of desirable leave trees provided that the average TPA is met and the low end of the spacing variance is not applied uniformly.
2. Desirable leave trees possess good growth and vigor, using the following species preference when applicable ponderosa pine, western larch, Douglas-fir, western red cedar.
3. Retain existing levels of large coarse woody debris and snags.
4. Cut all conifer regeneration, except for western white pine, within 50' (± 5 feet) of aspen.
5. Slash created from understory thinning treatments will be discontinuous with a fuel bed height less than 2 feet above the ground including natural obstacles, while avoiding heavy accumulations adjacent to residual leave trees.
6. Conifer regeneration is defined as trees between 3 feet in height and a DBH less than 7.0 inches.

Direction common to all units:

1. Retain all aspen, cottonwood, and western white pine.
2. No designated leave trees will be cut.
3. Trees showing signs of disease or insect attack are higher priority for removal regardless of species preference.
4. In root disease pockets, favor species that are more resistant, i.e. western larch, ponderosa pine, western red cedar.
5. Conifer regeneration selected for cutting will not have stumps exceeding 12 inches and will be cut below the lowest live limb.
6. Where Douglas-fir, western larch and lodgepole pine overstory trees are infected with mistletoe, no leave trees of the infected species shall be selected within a 50-foot radius (± 5 feet) of the infection source, if there are other acceptable disease free tree species available.

**GENERAL SPECIFICATIONS FOR ALL PROJECTS**

DEFINITIONS

Aspen clumps: An Aspen clump is defined as having five or more live aspen trees greater than 10 feet tall within 15 feet of each other.

Basal Area: The cross-sectional (sq ft) area of trees measured at DBH.

Contract Administrator (CA): The on-site contract administrator for the Mandatory and Option work items who represents the Contracting Officer. The duties and responsibilities of the CA are defined in the letter of designation issued by the Contracting Officer.

Damage: Defect or deformity of a tree resulting from agents such as wind, snow, animals, insects, disease, and equipment, and evidenced by such things as dead or broken tops or trunks, crooks, and deep scars or damage to the bark on more than ¼ of the circumference of the tree.

DBH (Diameter Breast Height): A point on the bole of a tree 4.5 feet above the ground measured on the uphill side.

Desired Condition: Includes any applicable direction within the marking plan.

Gaps: Refer to Section V.

Ladder Fuel: Small diameter (<7.0 inches DBH) conifer trees growing under other more desirable trees to reduce risk of fire moving from the ground to the tree crowns.

Leave Trees: Trees not designated for removal or other prescribed treatment and all hardwoods regardless of size.

Lop and Scatter: An intermediary treatment conducted prior to piling, underburning, or jackpot burning. Lop and scatter consists of bucking and possibly limbing of trees to increase fuel consumption during burning, reduce the height of the residual slash in the unit, or to facilitate piling or decomposition.

Slash: Boles of cut trees, tops and/or limbs created by the Contractor's operations.

Thinning: The process of selecting and leaving the desirable leave trees to meet the average spacing listed for the units under Project 003.

Spacing: The horizontal distance from the trunk of one leave tree to the trunk of the next nearest leave tree. Average spacing is calculated from the leave trees per acre.