

DRAFT MARKING GUIDES
MIDDLE FORK WEISER RIVER LANDSCAPE RESTORATION PROJECT

K.3.5.5# – DESIGNATION BY PRESCRIPTION. (9/04) Within Subdivision(s) or cutting unit(s) ____, as shown on Contract Area Map, the following criteria shall be used by Contractor to designate trees and other products for cutting and removal. Contractor shall Mark leave trees with Contractor's non-tracer Orange paint. Forest Service shall inspect and approve Marking prior to cutting.

(a) Marking Guide

This marking guide is designed to be used in all of the cutting units required to be marked by the contractor. Vegetation conditions will vary between cutting units and between different parts of each cutting unit. These marking guides are designed to be applied based on these varying conditions.

The post-treatment structure is expected to be a mosaic of thinned areas, created openings, natural openings, and patches of sapling size trees. Denser areas would be thinned while patchy areas and openings would be created where vigorous trees are scarce. A clumpy pattern is expected in the thinned areas as a result of leaving trees close together that have high crown ratios, and retaining certain large diameter trees, and Legacy Trees. The created openings should generally have a clumpy structure as a result of leaving all trees that meet retention criteria as well as any additional trees needed to provide wildlife habitat.

This marking guide is based on target basal area ranges, crown separation, dwarf mistletoe infection, crown ratios, and species preference. Other guidelines include retaining certain large diameter trees, retaining all Legacy Trees, maintaining large tree size class stands, limiting the size of openings, rejuvenating aspen patches, and retaining bed and bank trees on ephemeral streams.

The guidelines are designed to leave an **average** of 30 trees per acre (TPA). Leaving 30 TPA will result in an average distance between crowns of approximately 15 feet.

Guidelines

The following guidelines will be used for leave tree selection:

Target basal area ranges

Trees should be retained to meet the following residual basal area (BA) guidelines. These guidelines are based on what the average diameter breast height (DBH) would be for the residual trees after harvest.

Average Residual DBH	Target BA Range
13 – 16 in.	20-60 sq. ft., average 40 sq. ft.
17 – 20 in.	40-80 sq. ft., average 60 sq. ft.
21 – 24 in.	60-100 sq. ft., average 80 sq. ft.
25 – 28 in.	80-120 sq. ft., average 100 sq. ft.
29 in. plus	100-140 sq. ft., average 120 sq. ft.

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These target BA ranges are meant to be used in parts of cutting units where densities are higher than desired. The objective is to decrease densities in the denser areas (including small patches of trees) to the desired target BA range. The objective is not to meet an average BA for the overall cutting unit. The average residual DBH will be different within different parts of each cutting unit. Adjacent openings and less dense areas should not be included in plots used to measure BA. A 20 BAF prism or the 20 BAF bands on a Relaskop should be used to measure BA.

Crown separation In most cases trees should be removed to ensure crowns do not touch and that crown separation is generally between 5 to 20 feet. However, crown separation guidelines should not be used when marking clumps. Clumps are defined as 5-9 dominant or co-dominant trees of the preferred species (PP, WL, or DF) with generally 35% or greater crown ratios, that are grouped together; all trees within the group should be retained. There will be on average one 5 to 9 tree clump per acre. Crown separation guidelines should not be used if separating crowns would reduce the BA below the target range noted above.

Dwarf mistletoe Use dwarf mistletoe infection ratings as follows:

- WL – retain if Hawksworth rating is 3 or less
- PP – retain if Hawksworth rating is 4 or less
- DF – do not retain if there is any mistletoe infection unless the tree is more than 35 feet from non-infected DF and the Hawksworth rating is 2 or less. Exception: see next bullet
- Leave DF trees that have Hawksworth ratings of 5 or 6 for wildlife habitat when two or more of these trees are clumped together, and these clumps are more than 35 feet from non-infected DF trees that would be retained.
- Do not retain any tree with a dwarf mistletoe infection if it is adjacent to a ¼ acre or larger created opening (see created openings below).

Species preference The order of species preference for retaining trees is: 1) WL, 2) PP, and 3) DF. Other species should generally be retained only when they would not meet merchantability specifications due to damage, poor tree form, or indicators of rot. These cull trees should be left as wildlife habitat and should be marked with an orange “W”. Cull trees should not be included in BA measurements. Some of the following guidelines allow for large diameter trees of other species to be retained.

Crown ratios Trees to be retained must have at least a 30% crown ratio. Give preference to trees with the highest crown ratios. However, give preference to WL over PP or PP over DF if the more preferred species has at least a 30% crown ratio and its crown ratio is no more than 10% less than the less preferred tree. Crown ratio guidelines do not apply to the cull/wildlife trees, Legacy Trees, or trees that need to be retained to maintain large tree size class stand criteria.

Retention of large diameter trees (trees 20 inches DBH and larger) When the target BA range cannot be met by retaining WL, PP and DF that meet retention guidelines, retain large diameter vigorous appearing grand fir (GF) and Engelmann spruce (ES) with 50% and higher crown ratios to meet the target BA range, regardless of crown separation.

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Retain large diameter WL and PP, 26 inches dbh or larger, regardless of crown separation and target BA range, unless they do not meet dwarf mistletoe and crown ratio criteria. However, do not retain more than 20 sq. ft. over the upper limit of the BA range.

Large tree size class units Large tree units currently have eleven or more trees per acre that are 20 inches or greater DBH. In large tree size class units retain at least eleven 20 inch DBH or larger trees per acre (11 TPA average for the stand). This may require retaining large diameter trees that do not meet the requirements for retaining trees described above. Large tree size class cutting units include:

Legacy Trees All Legacy Trees should be retained. See following Ponderosa Pine and Western Larch Legacy Tree Guidelines.

Created openings In parts of units where few or none of the trees meet the requirements for trees to be retained, created openings will be limited to no more than 2 acres in size. Created openings are areas with 15 TPA or less that are at least 8 inches DBH. Within the created openings, if fewer than 5 TPA meeting retention criteria are present, leave 1 clump of 5 trees that do not meet retention criteria per acre. These clumps should incorporate snags where possible. Clumps should not contain trees with dwarf mistletoe infections. Where these created openings would be larger than 2 acres, restrict by leaving uncut patches of at least ½ acre that are at least 100 feet wide. Do not create openings within riparian conservation areas (RCAs).

Aspen patches Where aspen occurs in ¼ acre or larger patches do not retain coniferous trees within 50 feet of the aspen patch. Exceptions: leave any wildlife cull trees, any overstory PP with a 40% or higher crown ratio, large diameter PP that meets other retention standards, and Legacy Trees. To be considered an aspen patch, an area at least ¼ acre in size must have aspen trees occurring at an average spacing of less than 20 feet between stems. Do not create openings for aspen within riparian conservation areas (RCAs).

Ephemeral streams Retain all trees that are growing in the bed or banks of ephemeral streams.

Lodgepole pine Where target basal areas cannot be met following the rules described above, leave vigorous appearing LPP that have 40% or greater crowns and no dwarf mistletoe infections, to meet the desired basal area range. The crown separation rules must be followed.

Definintions

Crown Ratio – the ratio of crown length to total tree height, after accounting for gaps in the crown.

DBH – diameter at 4.5 feet above ground level.

Hawksworth Rating – A system for rating dwarf mistletoe infections. The crown is looked at in thirds with the crown divided horizontally. The percentage of limbs infected is determined in each third. If more than 50% are infected the rating for that third is 2. If less than 50% are infected the rating is 1. If there is no infection the rating is 0. The ratings for

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the three thirds are added together to determine a rating of from 0 to 6.

Large Tree Size Class Stand – stands with at least 10% canopy closure from 20 inch DBH and larger trees.

Ephemeral Streams – streams that flow only during periods of high run-off.

Bed or Bank of Ephemeral Streams – area along streams scoured or shaped by flowing water.

Overstory – the canopy layer made up of large mature trees as opposed to the understory sapling size trees.

Dominant Trees or Co-dominant Trees – trees that are a part of the primary overstory canopy layer.

Crown Separation – the horizontal distance between tree crowns

Riparian Conservation Areas (RCAs) - Perennial streams have a 240 foot RCA and a 120 foot no-cut zone. Intermittent streams have a 120 foot RCA and a 30 foot no-cut zone. The no-cut zones are marked on the ground with orange paint.

Legacy Trees – see attachment.

- (b) Additional trees to be cut, if any, are Marked by Forest Service with Blue tracer paint.
- (c) Cutting unit boundaries and other trees that shall be left uncut are Marked by Forest Service with Orange tracer paint.