

Appendix L: Forest Stand Map



Appendix M: Stand Management Plan

Stand 1

The stand consists of two polygons, totaling 125 acres. Dominated by Douglas fir (80% of stocking), other minor species are western larch, grand fir, and ponderosa pine. Basal area is 130 square feet per acre, consisting of 120 trees per acre (tpa), with an average diameter of 14". There is no discernible component of trees <7" diameter at breast height (dbh). A heavy cover of tall shrubs dominates the understory. Gross volume is 15.9 MBF per acre, estimated to grow to 20.4 MBF/acre in a decade. Scolytus (bark beetle) is active in the grand fir, with heavy mortality. Douglas fir and western larch have a moderate to heavy mistletoe infestation. Growth is moderate for codominant and dominant Douglas fir and ponderosa pine, and very slow for intermediate Douglas fir, ponderosa pine; and all western larch. Slopes average 60%, soils are rocky. Elevation ranges from 4470' to 6000'. Part of this stand is the parcel that OPRD contributed which is adjacent to the primary RY property. This 33 acre parcel has a residual component of large old ponderosa pine with an understory 100-120 year old Douglas fir and grand fir. There is evidence of historic fire throughout the parcel. Stand 1 lies adjacent to and above the highway to the head of Wallowa Lake

Recommendation: This stand is declining and overstocked. Recommended treatment is a restoration prescription, retaining approximately 80 square feet of basal area per acre, favoring ponderosa pine, western larch, and dominant Douglas fir with no higher than a moderate mistletoe infestation. Estimated volume recover is 9.5 MBF/acre, or 998 MBF considering the openings and lightly stocked ridgetop portions of the stand. There will have to be some road upgrading to allow equipment access to haul uphill with a cable system. Following the whole-tree yarding operation, it is expected that the understory tall shrub component will increase, with some establishment of natural regeneration, regenerating this stand is not the purpose of the restoration treatment. This will likely not be a site that can be burned following harvest activity, since it is adjacent to a high-use area at the head of the lake. Several homeowners border the western boundary of the former State Parks parcel, and at least one homeowner borders the southwestern boundary of the county property. Interaction with all bordering parties will be essential, from agreeing on boundary locations, to seeking to educate on why a harvest is happening in their backyards.

Priority – High priority for restoration thinning via skyline logging. Will yield considerable volume.

Stand 2

This 20-acre stand consists of scattered residual trees following a heavy overstory harvest approximately 20 years ago, with a regeneration layer that is clumpy, but vigorous. The residuals consist primarily of grand fir, with scattered western larch, Douglas fir, and ponderosa pine, at a stocking of 30 trees per acre, clumpy, and 34 square feet of basal area. Gross volume per acre is an average of 3.0 MBF. The regeneration layer, also clumpy, consists of an average 775 trees per acre, of which an average of 200 tpa will likely thrive to merchantability. Growth in the regeneration layer is good to excellent. In the residual layer, the Douglas fir and western larch have a moderate to heavy dwarf mistletoe infestation. Slopes are less than 35%. The stand is in the Grand fir/Pinegrass plant association. Elevation ranges from 5670' to 6100'.

Recommendation: A pre-commercial thinning treatment in the regeneration layer would be beneficial, and should be done before the trees become tall enough to require a more expensive treatment. The residual overstory provides a structural component that is more valuable standing than harvested. A 15.3-acre pre-commercial thinning unit has been flagged and mapped. Recommended stocking target is 175 tpa, or 16' spacing, with an emphasis on retaining fire resistant, shade intolerant species (western larch, ponderosa pine) as first priority, Douglas fir and lodgepole pine as second priority, grand fir as third priority. Specs should be formulated to favor dominant and codominant trees of the preferred species, with provisions for grouping while retaining average trees per acre target.

Priority – high for pre-commercial thinning, particularly if cost-share funding is available.

Stand 3

The 14-acre stand is two-story, consisting of a light ponderosa pine/western larch overstory, with a ponderosa pine/grand fir understory that is largely commercial-sized. Total stocking is 85 square feet per acre, consisting of 85 tpa over 7" dbh, and 925 tpa under 7" dbh. Average commercial size is 11.8" dbh, but this is skewed higher by the overstory diameters. Gross volume per acre is 6.1 MBF, projected to grow to 10.1 MBF in a decade, reflecting the entry into commercial size of a significant proportion of the understory. The crop trees in the understory average 200 per acre, with an average dbh of 4", and are growing well. There is an active Scolytus infestation in the grand fir. The western larch has a light to heavy dwarf mistletoe infestation. Slopes are gentle. Elevation averages 4800'. The stand lies within the Grand fir/spiraea plant association. An intermittent stream runs through the stand.

Recommendation: There is some significant natural thinning due to the Scolytus, and growth is excellent. A commercial thinning treatment should be conducted in about ten years when the stand grows into a more commercially viable size.

Priority – Very low. Let grow. Reassess in ten years.

Stand 4

The stand is a 28-acre mix of predominantly ponderosa pine and Douglas fir, with a minor component of surviving grand fir from an active Scolytus infestation. The stand had a significant overstory removal 18 years ago. The commercial component of the stand averages 74 square feet, with 85 trees per acre, averaging 12.4" dbh. Total basal area, including trees <7" dbh is 86 sq ft per acre. Growth is excellent. Gross volume is 4.9 MBF per acre, with a projected decadal volume of 9.6 MBF. Trees less than 7" dbh average a clumpy 250 trees per acre, with crop trees averaging 50 tpa, at 2" average dbh. Elevation averages 4800', with a gentle slope. The stand lies within the Grand fir/pinegrass plant association.

Recommendation: Examine this stand in ten years for a commercial thinning treatment, when gross volume will support a revenue-positive operation. Growth will continue to be excellent, since the stand is not overstocked.

Priority – Very low. Let grow. Reassess in ten years.

Stand 5

This 29-acre stand is approximately 60 years old, and was commercially thinned approximately 11 years ago. Trees >7" average 60 tpa, with an average diameter of 10.8", and a basal area of 39 sq ft/acre. Volume per acre is indeterminate because so few trees yield a 32' log, and therefore no tariff value in the OSU cruise program. Trees <7" average 112 tpa, of which 25 tpa are DF 6" dbh crop trees. Looked at a little differently then, 85 tpa are over 6" dbh crop trees, with an average BA of 44 sq ft/acre. Growth is excellent. There appears to be some recent mortality in the Douglas fir, with some signs of root rot. The stand is in the Grand fir/Pinegrass plant association. Elevation is 5500'.

Recommendation: This stand has undergone stocking control and should be left to grow for 20 years.

Priority – Very low. Let grow. Reassess in 15-20 years.

Stand 6

This 8-acre stand consists of an older layer of ponderosa pine, western larch, and Douglas fir, averaging 45 trees per acre, with an overstocked understory (0-7" dbh) of grand fir and Douglas fir, averaging 725 tpa". Trees likely to thrive to merchantability in the understory number 150 trees/acre, with an average diameter of almost 3". Basal area per acre for trees >7" is 80 square feet, with an average diameter of 13.0", with another 30 square feet for trees 1-7" dbh. Volume per acre is 9.2 MBF gross, 1.2 MBF of which is understory grand fir. There is a light mistletoe infestation in the western larch. Slopes are gentle. Growth in the understory is still very good, while overstory growth has slowed in the last five years. There is an active Scolytus infestation in the grand fir. The stand has been commercially thinned within the last 20 years. The stand is in the Grand fir/pinegrass plant association. Elevation is 4800'.

Recommendation: Re-evaluate in the next three years to assess grand fir mortality on overall stocking and the potential release of more fire-resistant species. A significant proportion of the grand fir less than 7" is close to becoming merch as pulp. The decision process should be based on pulp value and how much mortality has occurred. Pre-commercial thinning would be prohibitively expensive due to the size of the excess stocking.

Priority – Moderate. Reassess in three years for a commercial thin, and explore potential for costshare of simultaneous pre-commercial thinning.

Stand 7

The stand, 156 acres, is composed of Douglas fir and ponderosa pine, 33 trees per acre, with an average DBH of 23". Basal area is 93 square feet per acre. The understory is very clumpy, with an average of 225 trees per acre, primarily Douglas fir seedlings and small saplings. Only 50 trees per acre under 7" dbh were considered

crop trees, indicating that in openings, seedlings and small saplings are densely grouped, and most are excess due to crowding. Gross volume per acre is 14 MBF, with a decadal projection to 16.5 MBF. Growth is excellent. There is a light mistletoe infestation in the Douglas fir. Slopes average 55%. The stand is in the Douglas fir/Rocky Mountain maple-ninebark plant association, and has a heavy component of tall shrubs. Elevation ranges from 4470' to 5200'. The stand lies adjacent to and above the highway to the head of Wallowa Lake.

Recommendation: Current growth is excellent and the structure is optimal. The stand is not overstocked. Re-examine the stand in ten years.

Priority – Very low. Let grow. Reassess in ten years.

Stand 8

This 36-acre stand consists of a Douglas fir, western larch, and ponderosa pine overstory, with a grand fir/Douglas fir understory of poles and saps/seedlings. The total merchantable basal area is 77 sq ft/acre, with 64 tpa. Average diameter is 14". The 0-7" dbh understory averages 240 tpa, of which 120 will probably thrive to merchantability, with an average dbh of 2". Gross volume per acre is 7.4 MBF, growing to 12.5 MBF in ten years due to the excellent growth in both stories. There is a light mistletoe infestation in the western larch, and light mortality in the grand fir due to Scolytus. The stand was commercially thinned approximately 10 years ago. The stand is in the Grand fir/spiraea plant association. Slopes are gentle. A red-tailed hawk obviously nests in the stand. A non-fish bearing perennial stream runs through the stand which would require a buffer. Elevation is 4850'.

Recommendation: The stand is growing very well, with very good stocking and structure. Re-evaluate in 10 years for another commercial thinning if basal area exceeds 100 sq. ft.

Priority – Very low. Let grow. Reassess in ten years.

Stand 9

This 35-acre stand was high-graded approximately 30 years ago, leaving a mixed species stand composed of grand fir and Douglas fir, with scattered western larch, lodgepole pine, and ponderosa pine. Basal area of trees >7" is 77 sq ft, with an average of 113 trees per acre. Average stand diameter is 11.1". Average gross volume is 6.9 MBF per acre. Douglas fir and larch have a moderate/heavy mistletoe infestation. Slopes average 55%, so any harvesting would be by cable system. Growth is slow to moderate. The stocking of trees <7" DBH is grouped, with an average of 1000 trees per acre, 10 sq ft of basal area, of which 25 tpa would likely make it to maturity, the remainder being suppressed. The stand is in the Grand fir/twinflower plant association. Elevation ranges from 5300' to 5850'.

Recommendation: Only approximately 3.5 MBF per acre would be available for harvest under a restoration prescription, which is light for a cable unit. The stand should be left to grow for ten years, at which time volume per acre is projected to be 9.0 MBF, with around 4.5 available for harvest.

Priority – Low. Reassess in ten years for restoration treatment.

Stand 10

This 33-acre stand is mixed-species, consisting primarily of lodgepole pine and grand fir, with western larch, Engelmann spruce, Douglas fir, and subalpine fir, and has not been harvested. Stocking of trees >7" is an average 130 trees per acre, with an average basal area of 111 square feet. Average stand diameter is 12" dbh. Average gross volume per acre is 10.8 M, with a decadal growth to 14.5 MBF gross. The lodgepole pine is fading due to over-maturity and a moderate to heavy mistletoe infestation. Stocking of trees <7" dbh is 875 tpa, with an impressive 250 tpa likely to reach merchantable size. Total basal area per acre is 120 sq ft, including the trees <7" dbh. There is a heavy tonnage of down woody material. The slope averages 45%. The stand is in the Subalpine fir/Grouse huckleberry-skunk leaved polemonium plant association. Elevation is 5750' to 6400'.

Recommendation: A stocking control harvest, be it a commercial thinning or a restoration treatment, would not be financially feasible at current timber prices, due to higher costs of cable logging, and the lower value of the primary species to be removed (lodgepole pine and grand fir). While the lodgepole pine mortality is a toss-up, other species are growing well, including trees <7". Re-evaluate if timber prices for lodgepole pine and grand fir, or pulp, improve by 35-50%.

Priority – Moderate. Reassess periodically for a commercial thin if log markets improve.

Stand 11

This 69-acre stand is clumpy and overstocked, regenerating from a heavily cutover harvest more than thirty years ago, and consists of a mix of western larch, grand fir, ponderosa pine, Douglas fir, and an occasional lodgepole pine. Stocking of trees greater than 7" is 125 tpa, with an average basal area of 76 sq ft. Average diameter is 10.5". Gross volume per acre is 5.5 MBF, with a predicted ten-year growth to 8.7 MBF. Growth is good to excellent. Trees less than 7" are stocked at 750 tpa, with a crop tree stocking of 100 tpa, primarily in clumps of pre-commercial size. Considering the 15 sq ft in the pre-commercial size, total stocking is 91 sq ft/acre. The stand age of commercial-sized trees averages 55 years of age. Slopes range from gentle to 60%. The stand is in the Grand fir/twinflower plant association. Elevation ranges from 5200' to 6050'.

Recommendation: There are significant clumps of pre-commercial trees intermixed with a light stocking of commercial-sized trees. These clumps are intermingled with clumps of trees over 7". Because the stocking is growing well, waiting ten years until the pre-commercial clumps are commercial makes sense economically. This would also benefit the overall stand condition and growth. Commercially thinning now would only yield about 2 MBF per acre, and would leave large portions of the stand in need of precommercial thinning, when many of those excess trees would be commercial in ten years.

Priority – Low. Plan for commercial thin in ten years.

Stand 12

Apparently regenerated following fire, this 74-acre stand is well-stocked with some holes, dominated by grand fir, with 20% lodgepole pine and 20% Douglas-fir/western larch. Trees over 7" DBH average 103 per acre, with an average BA of 50 sq ft. Volume is 1.8 MBF/acre. Average diameter is 9.4". Diameter growth is vigorous, averaging close to 4" per decade. Projected decadal growth is to a volume of 4.7 MBF/acre. The stocking of trees <7" is dominated by grand fir, averaging 75 tpa, all excess. Dead grand fir (*Scolytus* mortality) average 28 trees per acre. The stand is in the Grand fir/Rocky Mountain mapleninebark plant association. Elevation is 4940' to 5200'.

Recommendation: Growth is excellent in all species, and the stand is not overstocked. Further mortality in grand fir is expected, which is a de facto self-thinning. Reassess in ten years for feasibility of a commercial thin.

Priority – Low. Reassess for commercial thin in ten years.

Stand 13

This 227-acre stand consists of mostly Douglas fir and grand fir stocking, with an occasional ponderosa pine, Engelmann spruce, western larch, and lodgepole pine. With an average diameter of 11", the stand is residual from a high grade operation approximately 20-30 years ago. Douglas fir and western larch has light to heavy mistletoe, while grand fir has a high cull component from stem rot and poor form, as well as an active *Scolytus* infestation. BA is 48 sq ft per acre, with 73 trees per acre >7". There are an average of 312 trees <7" per acre, with only 71 tpa rated as likely to survive to merchantability, mostly DF seedlings. About half of the residual stand is rated acceptable to leave. Gross volume per acre is 3.0 MBF, with a decadal growth to an estimated 4.0 MBF/acre gross. The stand ranges from the Grand fir/Pinegrass to the Grand fir/Twinflower plant associations depending on aspect and cover. Elevation ranges from 4970' to 6020'. Slopes average around 40%. The site was tractor logged in the prior entry, with no apparent erosion after approximately 30 years.

Recommendation: There is not enough volume to harvest at this point. The scattered pine, Douglas fir, and western larch would be left as residual trees and would not contribute to harvest volume per acre. This stand may best serve as wildlife habitat, and allow further natural regeneration to stock the stand as the older trees decline. It may be that small pockets of group selection (up to 5 acres) can be found upon more intensive surveillance that would pay for harvesting, and would provide early seral microsites which are in short supply over the forest. It is an example of the negative long-term effects of high grading.

Priority – Very low. Let grow. Reassess in ten years.

Stand 14

Two stands, 344 and 7 acres, totaling 351 acres, consist of PP and DF, 96 sq ft per acre, with 26 tpa 17" or over. PP comprises 67% of the basal area, DF 33%. Trees over 17" are in the 110-140 year range, with the trees under 17" generally in the 40-80 year old range. Total 7"+ stocking is 75 tpa. Trees are in good condition and growing very well, with diameter growth averaging around 2.6" per decade. Grand fir, while a very small percentage of stocking, is dead or dying of *Scolytus*. Average volume of the commercial trees is 10.0 MBF per acre. Projected

decadal growth is to a volume of 14.2 MBF/acre. The stand is in the Grand fir/spiraea plant association. Elevation ranges from 4580' to 5460'. 1-7" stocking is light, with a total of 188 tpa, averaging 3", averaging 9 sq ft of basal area per acre. Of this stocking, acceptable crop tree stocking is 62 tpa with an average dbh of 4". Excess trees are largely due to spacing rather than site conditions.

Recommendation: Let the stand grow and increase volume for the next ten years. Structure is ecologically optimal, with three general age classes, and a healthy component of large-diameter trees older than 120 years.

Priority – Low. Plan for selective harvest in ten years.

Stand 15

The stand consists of three patches totaling 24 acres that burned approximately 30 years ago, and is in the first stage of restoration. Scattered western larch and Douglas fir overstory survived the fire, with an understory of stocked regeneration dominated by grand fir, western larch, and Douglas fir seedlings and saplings. Tall shrubs are a significant part of the understory. There is no appreciable volume left, and the overstory survivors are important for seed and shelter. Slopes average around 50%. The stand is in the Grand fir/Rocky Mountain maple/ninebark plant association. Elevation is 6100' at its midpoint.

Recommendation: These stands are early seral, which is an under-represented structural stage on the forest. No management activity recommended.

Priority – Very low. Let grow. Reassess in ten years.