# Approved WOODLOT LICENCE W1832 SITE PLAN

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|---|---|---|---|---|---|---|---|
| Woodlot Licence | **W1832** | Cutting Permit | **A** | Block | **2** | Opening # | |
| Total Area (ha) | **9.2** | Net Area to be Reforested (NAR) (ha) | **7.3** | Non-Productive - Natural (ha) | **0.0** | Non-Productive - Un-Natural (ha) | **0.6** |
| Area of Reserve (ha) | **1.3** | Type of Reserve | Wildlife Tree Patches (WTP) | Air Photo #s | BCC98051 #174-175 | | |
| Harvest Method | Ground Based: Small Cat on pre-located permanent skid trails. | | | | | | |
| Silvicultural System | SU 3 and SU 4: Single Tree Selection<br>Silvicultural system will be implemented by faller selection. The W1832 planning and logging staff jointly developed the partial cutting prescription for this block in the field, and are in agreement on tree selection parameters.<br>SU 5: Patch Cut | | | | | | |

| SU | NAR (ha) | Biogeoclimatic Ecosystem Classification | | | Regeneration Method | Preferred Species | Acceptable Species |
|---|---|---|---|---|---|---|---|
| | | Zone | Variant | Site Series | | | |
| 3 | 3.3 | ICH | Dw | 01a | Natural regeneration | Fd, Lw, Pl, Py | Cw, Pw, Bg |
| 4 | 4.0 | ICH | Dw | 01a | Natural regeneration with fill-in planting. | Fd, Lw, Pl, Py | Cw, Pw, Bg |
| 5 | 0.5 | ICH | Dw | 01a | Natural regeneration | Fd, Lw, Pl, Py | Cw, Pw, Bg |

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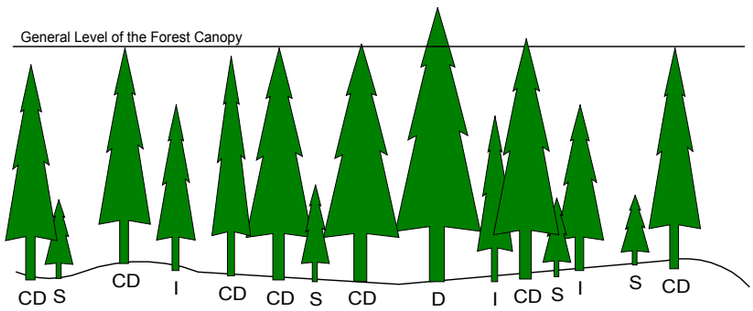
| Comments: | Fill-in planting will likely be required to meet stocking standards in portions of SU 4 which currently have low stocking densities, and in small openings which will result from combinations of harvest activity and bark beetle mortality. We estimate that fill-in planting may be required on approximately 4 hectares, at a average planting density of 400 stems per hectare. Post logging regeneration surveys will determine if fill-in planting is required or if natural regeneration will meet stocking targets.. |
| Elevation range if planting is specified | 940 to 980 meters |

**The free growing stand in SU 3 and SU 4 will be established in accordance with the stocking specifications in the Woodlot Licence Forest Management Regulation (November, 1998) Division 2 of Part 6 and Table B of Schedule A.**

**The free growing stand in SU 5 will be established in accordance with the stocking specifications in the Woodlot Licence Forest Management Regulation (November, 1998) Division 2 of Part 6 and Table A of Schedule A.**

## Explanation of Terms

The discussion of trees harvested and trees retained in the stand is organized by tree height class. The diagram below illustrates these terms.




The height classes are defined as:

- D - Dominant: A tree which extends well above the general canopy of the forest.
- CD - Co-dominant: A tree which is part of the general canopy of the forest. The co-dominant layer occupies the most canopy area in the stand, and receives direct sunlight to the top and sides of the crown.
- I - Intermediate: A tree that is below the general canopy layer of the forest, but extends into the canopy and receives direct sunlight only on the top of the crown. Intermediate trees may be in this crown position because they are loosing the competition for growing space in the stand, or because they are younger tress which germinated in the shade of the co-dominant layer and are now growing up through the canopy.
- S - Suppressed or Shaded: A tree that is well below the general canopy of the forest, and that is at a competitive disadvantage for growing space. The dynamics of suppressed trees in the forest are the same as those of intermediate trees.
- R – Regeneration: Small trees, generally less than 5 meters tall.

Snags are standing dead trees. These structures provide important habitat for many wildlife species.

Coarse Woody Debris (CWD) refers to large pieces of dead wood, generally fallen to the ground. CWD also provided wildlife habitat, and is directly linked to soil ecosystem processes which maintain site fertility and influence soil moisture holding capacity.

## Source of Information

The estimates of volume, basal area, stems per hectare, tree size, snag density, and harvest profile presented in this site plan are derived from nine 7.99 meter circular silviculture inventory plots established within the block. Trees in the neighborhood of the plots were “marked to cut”, therefor the inventory provides information on the effect of the silvicultural prescription on the forests in Block 2. This sampling intensity is expected to produce reliable results, but some variance from the estimates is expected.

The stand diagrams on the following pages are accurate graphic representations of the diameter, height, spatial distribution, and crown size of the trees in each SU derived from the vegetation inventory plots. The scale and magnification are constant in each pair of diagrams; trees which appear larger are in fact larger, stands which appear more dense are more dense.

## PARTIAL CUTTING PARAMETERS

### Standards Unit 3 – Dense SubMesic Fir

| SU 3 | Area: 3.3 hectares | BioGeo: ICHdw 01a | Site Moisture: Sub-Mesic |
|---|---|---|---|
| Pre-Harvest Stand, Green Standing Coniferous and Deciduous only: | Basal Area: 35 m2/hectare | Stems per Hectare: 548 | Standing Volume: 289 $m^3$/hectare |

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| **Forest Type** | The forest in SU 3 is a dense fire successional stand on the upper part of a dry, south aspect slope. The main forest canopy regenerated following fire in 1912, and is composed of medium sized Douglas-fir, lodgepole pine, ponderosa pine and aspen.<br>The stand is relatively spatially uniform, and contains few openings or less dense areas. The stand is also structurally uniform. It is basically single layered, with a dense overstory of co-dominant and intermediate trees over a sparse understory of small Douglas-fir regeneration.<br>Few large snags are found in SU 3. Most of the existing snags are pine which have been killed by endemic pine bark beetle populations.<br>Deciduous ground cover is constrained by relatively low light levels. A sparse but continuous low cover of false box occupies the site, and scattered Douglas maple and Shepherdia canadensis shrubs also occur. |
| **Management Objectives** | Stand management objectives for this forest area are to:<br>• Maintain hydrologically significant forest cover on the site while carrying out commercially viable timber cutting operations.<br>• Reduce current stocking levels to improve general stand heath and growth rate on retained stems, and to harvest incipient mortality.<br>• Increase the structural and spatial diversity of the stand by opening the forest canopy to create a suitable regeneration environment for Douglas-fir beneath the retained canopy, and by retaining a selection of reasonably healthy intermediate stems from the current canopy. The objective is to work towards a multilayered, multi aged stand.<br>• Develop snags, wildlife trees, and coarse woody debris populations for ecosystem maintenance by retaining large standing trees and developing old growth structures. Approximately 15% of long-term net timber growth will be directed to the creation of full cycle trees. |

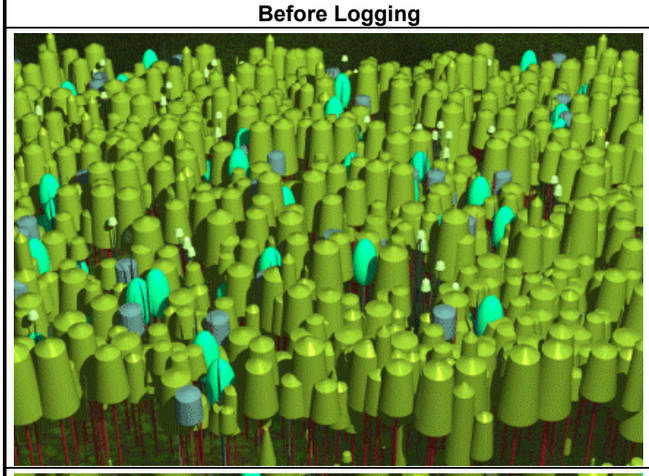
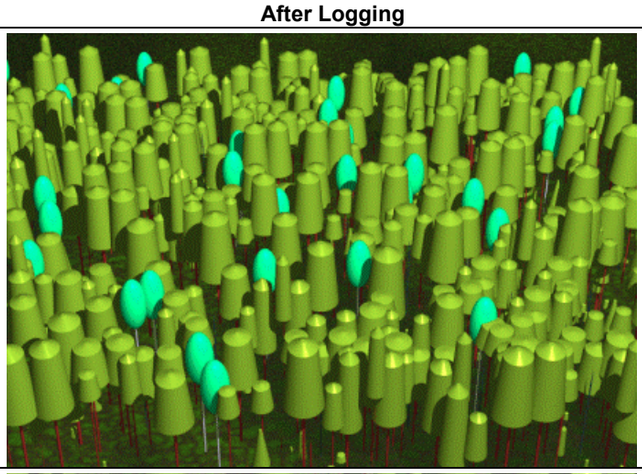
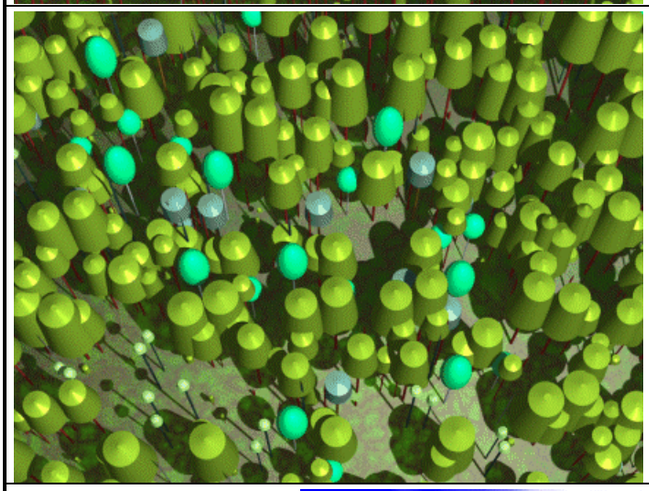
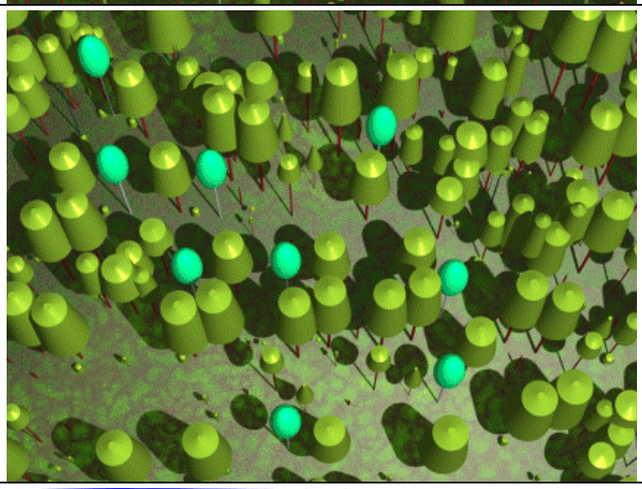
### Description of Live Trees to be Removed

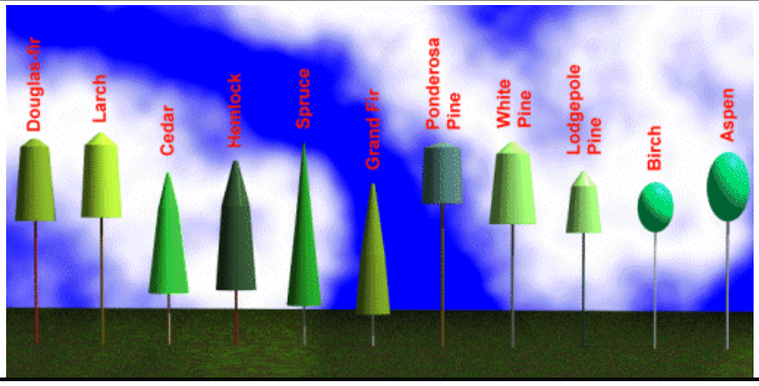
| SU 3 | Basal Area to be Cut |
|---|---|
| | Average: 20 m2/ha<br>% of Tot: 57%<br>Range: 14 - 26 m2/ha |

| | |
|---|---|
| **Distribution of Volume to be Cut by Species** | Douglas-fir 76%, Ponderosa Pine 12%, Lodgepole Pine 12%, and minor Aspen |
| **Details** | The silviculture inventory indicates that approximately 60% of the current stand volume, or 170 $m^3$/ha, will be cut. This relatively heavy cut reflects the management objective of thinning the existing dense canopy from below to create growing space for healthy co-dominant and intermediate trees and to create a suitable regeneration environment for Douglas-fir. Poorly formed, damaged, and low vigor stems will be removed from all crown classes to increase growing space for healthy residual trees. Dense patches of vigorous trees will also be thinned to create growing space for residual stems.<br>Most lodgepole pine will be cut. This species has reached the end of its life span in this forest, and is rapidly dying off from a combination of low vigor, overtopping by other species, and insect attack. Some lodgepole pine regeneration is expected following logging from cones left on site in logging slash.<br>Most ponderosa pine will also be cut. The shade intolerant pines are being overtopped and shaded out by the semi-shade tolerant Douglas-fir, and most ponderosa pine in this stand is in very poor health. Vigorous ponderosa pines will be retained to increase stand diversity, when found.<br>Aspen will be cut where it is in the way of logging operations. Felled aspen stems will be left on site as CWD.<br>Douglas-fir will be selected for cutting by the faller based on tree heath and vigor, stand successional dynamics, growing space occupancy, and operational feasibility.<br>An approximate cutting prescription by crown class follows:<br>• Approximately 50% of the co-dominant stem volume, or about 105 $m^3$/ha, will be cut. About 80% of the co-dominant volume to be cut is Douglas-fir, 10% is ponderosa pine, and 10% is lodgepole pine.<br>55% of the co-dominant trees to be cut (all of the pines and 40% of the Douglas-fir) have a fair to poor vigor rating, due to limited live crown, stem defects, and low growth potential. These trees are often not windfirm and not snow load resistant.<br>60% of the Douglas-fir co-dominant stems to be cut have a good vigor rating. These stems will be cut to open growing space for other healthy co-dominant stems, and to increase stand diversity by opening up growing space regeneration.<br>• Approximately 80% of the intermediate volume in this stand will be cut, or 55 $m^3$/ha, a mix of 70% Douglas-fir, 15% ponderosa pine, 13% lodgepole pine, and 2% aspen. The high proportion to be cut is due to the generally poor health of the shade intolerant tree species in the intermediate canopy in many parts of the stand. Theses stems are overtopped by the main canopy, and have a limited life expectancy.<br>• About 30 suppressed stems per hectare will also be cut. These are poor vigor Douglas-fir stems which have been stunted or damaged by growing in low light conditions in the forest understory. These stems contribute about 5 $m^3$/ha of timber. |

**SU 3 Dense SubMesic Fir**

**STAND DIAGRAMS**

| Before Logging | After Logging |
|---|---|
|  |  |
|  |  |



| Description of Live Trees to be Retained | | |
|---|---|---|
| **SU 3** | **Basal Area to be Left** | |
| | Average: 15 m2/ha<br>% of Tot: 43%<br>Range: 9 - 21 m2/ha | |
| **Distribution of Volume to be Left by Species** | Douglas-fir 97%, Aspen 3% (with incidental Ponderosa Pine) | |
| **Details** | Approximately 40% of the current stand volume will be retained after harvesting. Leave trees will be selected from the population of the healthiest trees in the stand.<br>Severely deformed and/or damaged stems will not be retained as crop stems, but may be retained as wildlife trees, or may be cut to create growing or regeneration space.<br>Aspen will be retained where they are not in the way of logging operations. The deciduous stems in this forest are in poor health and will likely die in the near future, but have no market potential and are valuable wildlife trees. They will be retained to provide habitat for wildlife, and to contribute to CWD stocks after their death. Aspen which are cut to facilitate falling and skidding of conifers will be left on site as coarse woody debris.<br>No ponderosa pine leave trees were tallied in the silviculture inventory, but some healthy individuals do exist in this SU and will be retained to increase stand diversity.<br>An approximate description of leave trees by crown class follows:<br>• Approximately 50% of the co-dominant volume, or 105 $m^3$/ha, will be retained. 97% of the co-dominant volume to be retained is Douglas-fir. These trees have large, healthy trees with large live crowns and good stem form. These trees will continue to grow and rapidly gain in ecological and monetary value, will provide a good seed source for regeneration, and will provide a good source of full cycle trees. 3% of the co-dom volume to be retained is made up of low vigor aspen.<br>• About 13 $m^3$/ha of intermediate stems will be retained, all Douglas-fir. These stems have a fair vigor rating, but were selected for retention for intertree spacing reasons, or to increase stand structural diversity by retaining some reasonably healthy trees from the intermediate canopy. These stems are expected to release and grow well after logging.<br>• About 1 $m^3$/ha (20 stems/ha) of suppressed stems will also be retained. These stems are in poor heath due to being overtopped by the main canopy, but have good stem form and will likely release after the overstory is thinned. These trees will be retained to increase stand structural diversity.<br>• About 120 stems/ha of small, non-merchantable trees of varying quality may also be retained after logging. This figure does not count stems less than 0.5 meters tall, which were not tallied in the field surveys.<br>A portion of the retained suppressed and regeneration will be damaged or killed during logging, and the current health and vigor rating on these stems ranges from poor to good. Still, a portion of this group of stems will likely survive logging activity, and release and grow well in the additional light and growing space available after thinning.<br>The suppressed and regeneration layers will be monitored in future surveys to ascertain their suitability for future crop trees. Sanitation spacing may be required at a future date to remove retained stems from this crown class which are badly damaged during logging and/or do not respond and release satisfactorily. | |
| **Spatial Distribution** | Leave trees will be distributed across the harvest area, but the density of leave trees will vary significantly, depending on the stand structure at the time of harvest and microsite conditions. An average basal area to be retained is noted above, with an expected range of variability. We expect that average post-harvest basal area will usually be within the target range. However, it is also expected that due to the natural variability within this forest, the minimum basal area target may not be achieved at every location. | |
| **Leave Tree Function** | • To retain an intact, functioning forest canopy and forest ecosystem on the site.<br>• To create a good regeneration environment with a mix of partial shade and well lit patches, an abundant seed source, and distributed minor soil disturbances from logging which will provide a suitable seed bed.<br>• To retain future timber management options by retaining high quality trees on the site to favor development of high quality, large sawlogs.<br>• To retain candidates for selection as full cycle trees.<br>• To provide wildlife habitat for species that utilize large conifers and open forest areas. | |

## PARTIAL CUTTING PARAMETERS

### Standards Unit 4 – Open SubMesic Pine and Fir

| SU 4 | Area: 4.0 hectares | BioGeo: ICHdw 01a | Site Moisture: Sub-Mesic |
|---|---|---|---|
| Pre-Harvest Stand, Green Standing Coniferous and Deciduous only: | Basal Area: 34 m2/hectare | Stems per Hectare: 810 | Standing Volume: 268 $m^3$/hectare |

| | |
|---|---|
| **Forest Type** | The forest in SU 4 is an open diverse fire successional stand on the upper part of a dry, south west aspect slope. The main forest canopy regenerated following fire in 1912, and is composed of mixture of medium and large sized Douglas-fir, lodgepole pine, ponderosa pine and aspen.<br>SU 4 has the same basal area per hectare as SU 3, and has more stems per hectare, but is actually a much less dense stand. The stand is spatially diverse, and is composed of an irregular mixture of dense patches and open areas. The stand is also structurally diverse. The site is moisture limited in summer, so trees growing in dense clumps, where competition for water is high, tend to be shorter and smaller in diameter than trees growing in the open, where competition for water is low to nil. Trees in clumps have limited live crown, while open grown trees have large boles and expansive crowns. Deciduous stems occur in small groups. The stand contains a patchy regeneration layer, with healthy advanced regeneration in openings.<br>Few large snags are found in SU 4. Most of the existing snags are pine which have been killed by endemic pine bark beetle populations.<br>A continuous deciduous cover of false box and other low perennials occupies the site, with scattered Douglas maple, Shepherdia canadensis, and saskatoon shrubs. The deciduous cover knee high and dense in open areas, but is low and patchy beneath patches of dense overstory,. |
| **Management Objectives** | Stand management objectives for this forest area are to:<br>• Maintain an open, dry site, forest on the site while carrying out commercially viable timber cutting operations.<br>• Maintain a diverse stand of multiple age classes and varying stand densities on this site. Manage to develop a multilayered, multi aged stand.<br>• Maintain a balance between forest stocking density and site water resources.<br>• Develop snags, wildlife trees, and coarse woody debris populations for ecosystem maintenance by retaining large standing trees and developing old growth structures. Approximately 15% of long-term net timber growth will be directed to the creation of full cycle trees. |

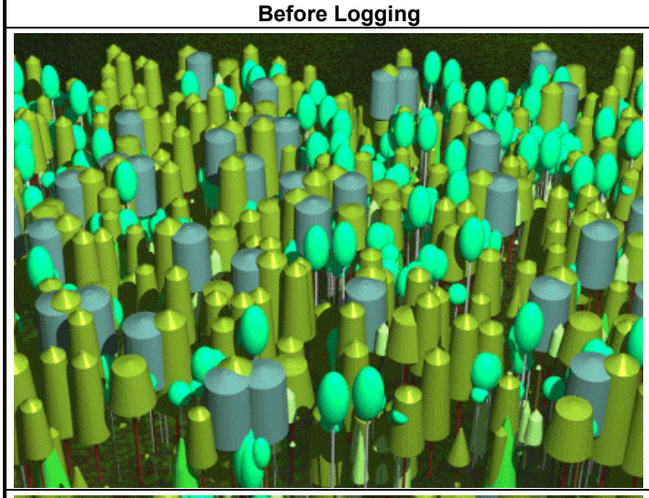
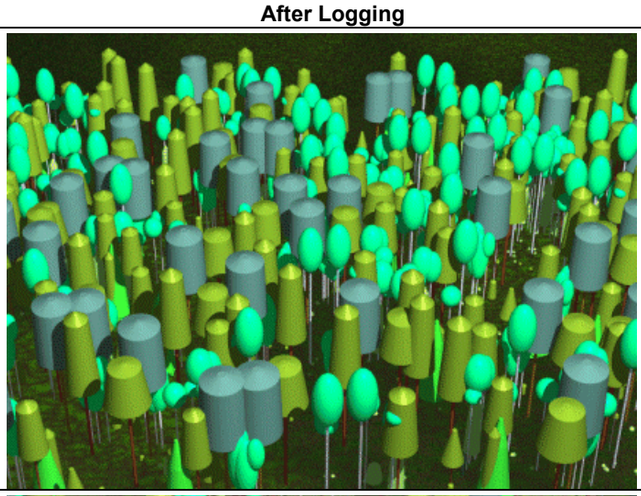
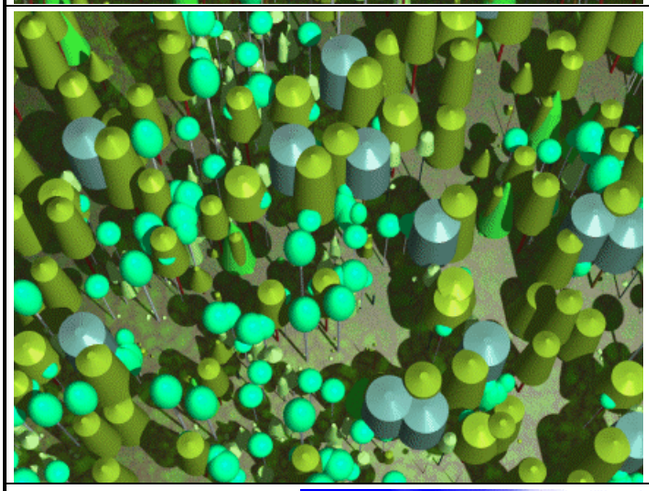
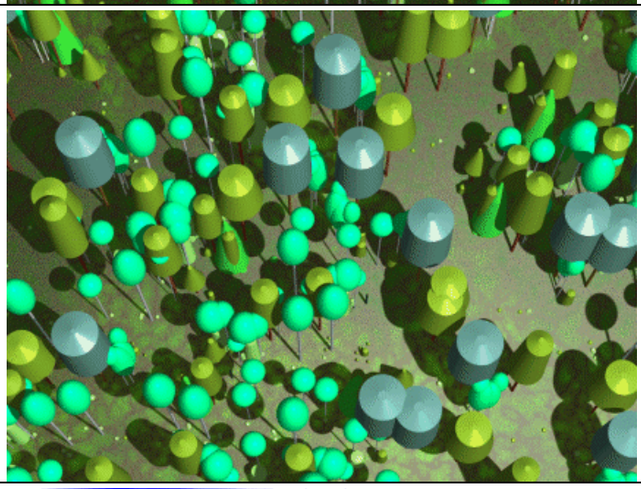
### Description of Live Trees to be Removed

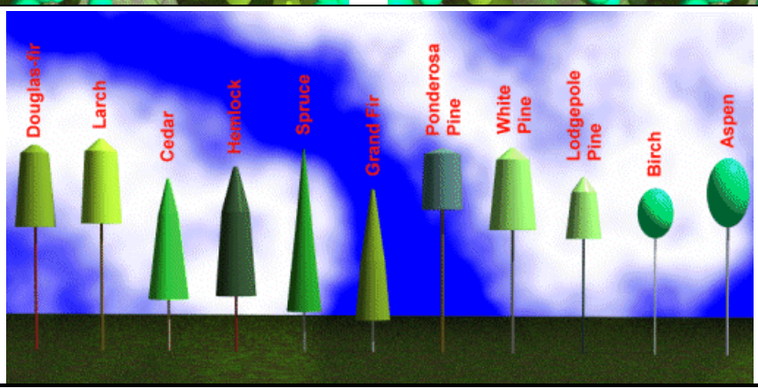
| SU 4 | Basal Area to be Cut | |
|---|---|---|
| | Average: | 9 M2/ha |
| | % of Tot: | 26% |
| | Range: | 5 - 13 M2/ha |

| | |
|---|---|
| **Distribution of Volume to be Cut by Species** | Douglas-fir 83%, Lodgepole Pine 14%, Aspen 2% and White Pine 1%, |
| **Details** | The silviculture inventory indicates that approximately 30% of the current stand volume, or 80 $m^3$/ha, will be cut. This low cut reflects the management objective of maintaining existing forest conditions in this stand. Poorly formed, damaged, and low vigor stems will be removed from all crown classes to increase growing space for healthy residual trees, although some will be retained as wildlife trees. Dense patches of vigorous trees will be thinned to create growing space for residual stems.<br>Most lodgepole pine will be cut. This species is approaching the end of its life span in this forest, is being overtopped by other species, and attacked by pine beetle. Some lodgepole pine regeneration is expected following logging from cones left on site in logging slash.<br>Aspen will be cut where it is in the way of logging operations. Felled aspen stems will be left on site as CWD.<br>Douglas-fir will be selected for cutting by the faller based on tree heath and vigor, stand successional dynamics, growing space occupancy, and operational feasibility.<br>An approximate cutting prescription by crown class follows:<br>• Approximately 30% of the co-dominant stem volume, or about 60 $m^3$/ha, will be cut. About 90% of the co-dominant trees to be cut are healthy Douglas-fir. These stems will be cut to provide growing space for other healthy co-dominant stems, and to increase stand diversity by opening up growing space for healthy intermediate stems and regeneration.<br>About 10% of the co-dominant harvest volume will be poor vigor lodgepole pine.<br>• Approximately 40% of the intermediate volume in this stand will be cut, or 15 $m^3$/ha. The intermediate trees to be cut are 70% Douglas-fir and 30% lodgepole pine, and are all in fair to poor health. These stems generally occur in more dense patches and are overtopped by the main canopy, and are not expected to release after logging. Removing them from the understory helps to maintain a balance between site moisture resources and forest stocking.<br>• About 50 suppressed stems per hectare will also be cut. These are poor vigor aspen, Douglas-fir, lodgepole pine, and white pine stems which have been stunted or damaged by growing in low light conditions in the forest understory. The silvicultural sampling indicates that most of these stems are not merchantable. |

**SU 4 Open SubMesic Pine and Fir**

**STAND DIAGRAMS**

| Before Logging | After Logging |
|---|---|
|  |  |
|  |  |



| Description of Live Trees to be Retained | | |
|---|---|---|
| **SU 4** | **Basal Area to be Left** | |
| | Average: 25 m2/ha<br>% of Tot: 74%<br>Range: 21 - 29 m2/ha | |
| **Distribution of Volume to be Left by Species** | Douglas-fir 58%, Ponderosa Pine 18%, Aspen 13%, Birch 8%, Cedar 3% | |
| **Details** | Approximately 70% of the current stand volume will be retained after harvesting. Leave trees will be selected from the population of the healthiest trees in the stand.<br>Severely deformed and/or damaged stems will not be retained as crop stems, but may be retained as wildlife trees, or may be cut to create growing or regeneration space.<br>Aspen and birch will be retained where they are not in the way of logging operations. The deciduous stems in this forest are have no market potential and are valuable wildlife trees. They will be retained to provide habitat for wildlife, and to contribute to CWD stocks after their death. Deciduous stems which are cut to facilitate falling and skidding of conifers will be left on site as coarse woody debris.<br>Most of the ponderosa pine in the stand are healthy and well suited to this submesic site, and will be retained to maintain stand diversity. However, some low vigor, overtopped pines do exist and will be cut..<br>An approximate description of leave trees by crown class follows:<br>• The small population of dominant Douglas-fir trees will be retained. There are only about 13 of these stems per hectare, but they contain approximately 15 $m^3$/ha of timber volume. These stems are the largest and healthiest trees in the stand, with large live crowns and good stem form. These trees will provide a good seed source for regeneration, and a good source of full cycle trees.<br>• Approximately 70% of the co-dominant volume, or 140 $m^3$/ha, will be retained. These trees are a diverse mix of 61% Douglas-fir, 23% ponderosa pine, and 15% aspen. The conifers are in good heath, and have large live crowns and good stem form. These trees will continue to grow in ecological and monetary value, will provide a good seed source for regeneration, and will provide a good source of full cycle trees.<br>The co-dominant aspen to be retained is in fair to poor vigor, and will likely die in the next several decades to provide excellent wildlife habitat.<br>• About 25 $m^3$/ha of intermediate stems will be retained, predominantly birch and cedar, with minor aspen, Douglas-fir, and white pine. These stems have a fair to poor vigor rating. The conifers will be retained for intertree spacing reasons, or to increase stand structural diversity by retaining some reasonably healthy trees from the intermediate canopy.<br>The intermediate deciduous stems to be retained are in fair to poor vigor. Some will likely die in the near future, but some birch clumps will likely live for many years, providing stand diversity and habitat for many bird species.<br>• About 4 $m^3$/ha (25 stems/ha) of suppressed stems will also be retained, two-thirds Douglas-fir and one-third aspen. These stems are in poor heath due to being overtopped by the main canopy. The Douglas-fir have good stem form and will likely release after the overstory is thinned, and will be retained to increase stand structural diversity. The aspen are very spindly, and will not likely survive a single winter following logging, but will become small woody debris.<br>• About 400 stems/ha of small, non-merchantable trees of varying quality may also be retained after logging. This figure does not count stems less than 0.5 meters tall, which were not tallied in the field surveys.<br>A portion of the retained suppressed and regeneration will be damaged or killed during logging, and the current health and vigor rating on these stems ranges from poor to good. Still, a portion of this group of stems will likely survive logging activity, and release and grow well in the additional light and growing space available after thinning.<br>The suppressed and regeneration layers will be monitored in future surveys to ascertain their suitability for future crop trees. Sanitation spacing may be required at a future date to remove retained stems from this crown class which are badly damaged during logging and/or do not respond and release satisfactorily. |
| **Spatial Distribution** | Stocking in this type is spatially diverse – irregular small openings up to 2 tree lengths across are mixed with dense clumps of conifers. Existing openings may be expanded by harvesting, and other small openings will be created. These open areas will be sufficiently well lit to support natural or artificial regeneration.<br>Clumps of and individual leave trees will be distributed across the harvest area. The density of leave trees will vary significantly depending on the stand structure at the time of harvest and microsite conditions. An average basal area to be retained is noted above, with an expected range of variability. We expect that average post-harvest basal area will usually be within the target range. However, it is also expected that due to the high level of natural variability within this forest, the minimum basal area target may not be achieved at every location. |
| **Leave Tree Function** | • To retain an intact, functioning forest canopy and forest ecosystem on the site.<br>• To create a good regeneration environment with a mix of partial shade and well lit patches, an abundant seed source, and distributed minor soil disturbances from logging which will provide a suitable seed bed.<br>• To retain future timber management options by retaining high quality trees on the site to favor development of high quality, large sawlogs.<br>• To retain candidates for selection as full cycle trees.<br>• To provide wildlife habitat for species that utilize large conifers and open forest areas. |

## CUTTING PARAMETERS

### Standards Unit 5 – Small Diameter Pine

| SU 5 | Area: 0.5 hectares | BioGeo: ICHdw 01a | Site Moisture: Mesic |
|---|---|---|---|
| **Forest Type** | No silvicultural inventory plots were located in this small SU. The following comments are based on visual inspection of the area.<br>The forest in SU 5 is a dense, pure, small diameter lodgepole pine stand on a midslope bench. The stand regenerated following the 1912 fire.<br>The stand is spatially uniform and structurally uniform. It contains few openings and is single layered, with a dense overstory of co-dominant and intermediate trees.<br>The pine forest is in poor health. The small diameter stems have small live crowns, and are starting to bend and fall from winter snow press..<br>No large snags are found in SU 5. Small pine snags are common, but these stems have very low wildlife habitat value.<br>A continuous low cover of false box and other low deciduous shrubs occupies the site. | | |
| **Management Objectives** | Stand management objectives for this forest area are to harvest the current forest cover and regenerate the area as an even aged pine forest. | | |

**Description of Live Trees to be Removed**

| | |
|---|---|
| **Distribution of Volume to be Cut by Species** | Lodgepole Pine 100% |
| **Details** | All of the stems in this SU will be cut because no potential leave trees which could reasonably be expected to remain standing after partial cutting can be found within this stand. were identified in a field inspection of this small area.<br>This forest patch is 20 to 40 meters wide and 150 meters long. Large Douglas-fir leave trees will be retained in the fir forest beside the pine stand. |

## PERMANENT ACCESS STRUCTURES

**Rationale for greater than 7% of the total cutblock area being occupied by permanent access structures:**

The overall area occupied by permanent access structures is 9% of total block area. This relatively high proportion is due to:

- The main access road to the woodlot runs along the long, south edge of the block. This haul road occupies 2% of the block area.
- Landings in this block will be located on sloping ground on the downhill side of the haul road. These decking locations will not be constructed or bladed, and will regrow trees well after harvesting, but they are removed from the timber management landbase because they will be utilized again in subsequent harvest entries.
- Disturbance from skid trails is included in the permanent access structures, and is not included in the soil disturbance within the net area to be reforested, shown below. The expected soil disturbance in the NAR is a low 3%, rather than the usual 10%.

| | | | | | |
|---|---|---|---|---|---|
| **Roads** | Length | 390 m | Width | One half of 10 m road right of way = 5 m | Area 0.2 ha |
| **Landings** | Length | Variable – located in field and traversed. | Width | Variable – located in field and traversed. | Area 0.2 ha |
| **Skid/Forwarder Trails** | Length | 1415 m | Width | 3 m | Area 0.4 ha |

| | | | | | |
|---|---|---|---|---|---|
| Total Cutblock Area (ha) | 9.2 ha | Total Area of Permanent Access (ha) | 0.8 ha | Maximum % of the Total Cutblock Area to be Occupied by Permanent Access Structures | 9% |

| | |
|---|---|
| Trails that will be used for repeated harvest entries are proposed as permanent access structures. | Yes. Trails are classed as part of the permanent access system and removed from the timber management landbase because they will be utilized in future harvest entries at 20 to 30 year intervals, and thus will not re-grow merchantable timber. Skid trail network to access entire landbase has been laid out in field. Location of skid trials is shown on Site Plan map. Trails will be left hydrologically stable after logging by construction of water bars and by seeding with anti-erosion mix where appropriate. |
| Roads, landings, borrow pits, or quarries within this cutblock are proposed for rehabilitation. | No |

## SOIL DISTURBANCE

| | |
|---|---|
| **Maximum Percentage the Net Area to be Reforested to be occupied by Soil Disturbance (% of NAR)** | 3% |

## REHABILITATION MEASURES

Describe the structures to be rehabilitated as well as the measures and timing for rehabilitation if the measures in the WLFMR **will not** be used

| | | | |
|---|---|---|---|
| **Structures** | None | **Measures and Timing** | N/A |

## RUB TREES

Rub trees are standing trees at the downslope edge of sharp corners or junctions on skid trials. Moving logs slide along the tree, and are prevented from leaving the trail and damaging nearby leave trees. Rub trees are created where required by leaving standing trees in appropriate locations. These trees will be badly damaged during logging, but will be retained to serve as rub trees again in the next logging pass. Approximately 15 rub trees will be created at trail junctions and corners.

| MEASURES FOR COARSE WOODY DEBRIS |
|---|
| Current CWD populations in this block are low. Little CWD from the pre-1912 stand survives, and few second growth trees have died to increase CWD levels.<br>CWD populations will be developed over the short and medium term through the falling of unstable snags during logging operations. CWD which is retained on site will include dead useless stems of all species and large, dead potential pine which contain no live bark beetles. Recently beetle-killed trees which likely contain live bark beetles will be harvested to reduce beetle populations.<br>Large trees will be available for future CWD inputs as required because a wide range of tree sizes are being retained after harvest.<br>Very long-term CWD management will be dealt with through the designation and management of full cycle trees, which will remain on the site permanently, and will eventually contribute large CWD to the forest. These trees will be selected from the leave trees retained in this cutting operation. |

| FOREST HEALTH ISSUES | |
|---|---|
| Issue | Measures |
| **Bark beetles** | Endemic populations of mountain pine beetle are present in the area. A reconnaissance on strip lines spaced 100 meters apart found scattered individual red and green attacked trees in the block. No action to salvage these individual stems is planned at this time. Beetle activity in the block will be monitored, and the harvesting schedule adjusted to cut green attacked trees if the level of beetle activity increases.<br>The planned harvesting in this stand should reduce the habitat value of the post-harvest forest for bark beetles:<br>• by increasing individual tree vigor by improving the growing conditions for retained large trees, and<br>• by interfering with the beetles pheromone communications by increasing air circulation in the stand. |
| **Root Disease** | Three incidences of root disease, each affecting from 5 to 10 trees, have been noted in the block. The root disease is believed to be Armillaria ostoyae. The root disease infections sites are on dryer, upland locations well suited to ponderosa pine or larch, which are resistant to Armillaria. The following management approach will be used:<br>• Existing ponderosa pine within infection sites will be retained.<br>• Other species of trees within infection sites may be harvested in areas with abundant CWD, or left to provide future snags and coarse woody debris in areas with low CWD levels.<br>• If planting is required in or adjacent to a root disease infection site, tree species which are resistant to the root disease will be planted. |

| NON-TIMBER RESOURCES AND RESOURCE FEATURES IN OR ADJACENT TO THE CUTBLOCK | |
|---|---|
| Feature(s) | Measures to protect or accommodate or the reason for not protecting the feature(s) |
| Ungulate Range Area<br>Block 2 is not in currently mapped ungulate winter range areas, but is expected to be in the revised ungulate winter range management areas under development by the Ministry of Water, Land and Air Protection at this time. | Ungulate forage areas are found throughout SU 3 in open areas with extensive deciduous shrub layers. The following measures will maintain ungulate range values:<br>• The SU 3 ecosystem will be maintained in an open forest condition with diverse habitat and extensive forage resources. Forage resources will be enhanced by additional light reaching the ground under the thinned forest canopy.<br>• Some deciduous shrubs (maple and birch) will be slashed during logging. The new growth from the existing stumps provides optimal ungulate browse.<br>• Landings, skid trials and other disturbed areas will be seeded with an ecologically appropriate grass and herb seed mix immediately after harvesting activity has ceased on that particular access structure. Prompt revegetation measures will help reduce the potential spread of knapweed onto areas disturbed by harvesting activity.<br>• The large wildlife tree patch in the block will provide ungulate forage areas for the foreseeable future. |

| SIGNATURE OF WOODLOT LICENSEE OR PERSON AUTHORIZED ON BEHALF OF THE WOODLOT LICENSEE(S) | RPF SIGNATURE AND SEAL |
|---|---|
| Signature Date (yy/mm/dd) | RPF Signature and Seal Date (yy/mm/dd) |
| **SIGNATURE FOR DISTRICT MANAGER APPROVAL** | RPF Name (Printed) |
| Signature Date (yy/mm/dd) | |