



Purpose and Scope

The purpose of these guidelines is to provide direction for Forest Resources Supervisors and contractor representatives to improve the level of understory protection through proper identification and implementation of protection measures in the field.

Reasons for Understory Protection

Several quota spheres and licenses overlap the Peace River Pulp Forest Management Area (FMA) dispositions. The maintenance of the Annual Allowable Cut (AAC) for these quota holders is dependent upon an adequate volume and area of young growing stock. A large percentage of the young coniferous is found in mixed wood stands with deciduous overstory. Beyond its value for future conifer wood supply, conifer understory represents a contribution to ecosystem-based management. Understory protection holds arguable benefits for line-of-sight screening, connectivity for wildlife movement, wildlife thermal protection, regulating site hydrology, soils conservation, persistence and re-establishment of moisture dependent plant communities, maintaining fur species habitat, buffering impacts to trap line viability, and reforestation. DMI will utilize the criteria and methods described below for blocks that require coniferous understory protection.

The Hotchkiss Understory Protection trials and other literature suggest that retention of aspen within the residual understory greatly improves the survivability of the understory after logging. Another suggestion is that understory that is less than 12 meters in height will also stand a better chance of surviving wind events. Other factors such as block shape, width, topography, wind direction, soil moisture, as well as age and conditions of the stand will also influence the effectiveness of understory protection measures.

All these factors should be considered when making decisions regarding the implementation of understory protection in the field. The retention strategies included in these guidelines may result in significant volume in a stand being left on site permanently.

The protection of understory requires proper identification of the understory during block layout. At the layout stage the following must be identified:

- Species
 - The identification of the species is an important consideration since white spruce and lodgepole pine are the preferred species for protection.
- Density of unmerchantable coniferous
 - The density of unmerchantable coniferous trees is important, as it will ultimately affect the protection strategy chosen, as higher densities require different methods to ensure protection is available.
- Height
 - Height of the understory is important as taller trees have less chance of surviving after harvesting. The height and size of trees may also affect how much aspen must be retained on the site.





- Percentage merchantable
- Outline of block area covered by understory
 - A map showing the area of the block that contains understory is desired, as it will also affect the strategy for protection. In some instances it may be possible to redesign the block to incorporate a pocket of understory in a reserve block and defer the harvest to allow the coniferous understory to reach merchantable size.
- Age and condition of understory
 - Age and condition of the conifer within the stand is important because if it is already quite old, or consists of suppressed conifers, protecting it may not be advantageous.

An example of a block map identifying a portion of a block with an understory may indicate:

- 500 stems/hectare (ha)
- 7 – 12 meters tall
- 50 % merchantable

In this case, the density of the understory to be protected will be 250 stems/ha. As with most harvesting within FMA disposition, all merchantable conifer must be harvested. Consequently, this portion of the block would not require understory protection measures such as designated skid trails, rather the clumps of understory would simply be avoided where possible.

Understory Protection Guidelines

The method of understory protection chosen is ultimately dependent upon the density of the unmerchantable conifer revealed during harvest. However, merchantability standards may be modified for a disposition after consultation with the quota holder. The desired width of trails should be approximately 5 to 7 meters to promote adequate suckering of aspen following harvest.

These guidelines will utilize the following distinctions between densities:

Light Understory (<250 stems/ha.)

- Operations will strive to avoid pockets of young coniferous trees.
- Attempt to locate roads and decking in areas of lesser concentration of understory.
- Bunchers will strive to place bunches outside pockets of understory.
- Skidder traffic will try to avoid pockets of understory, but will not be restricted to specific skid trails.
- Boundaries of cutblocks will be harvested first. In patches of understory, the trees may have to be felled outside the blocks to avoid turning trees.
- Operations 24 hours per day will continue.
- To further protect coniferous understory, they may be incorporated into snag tree retention areas.
- A buffer of up to 10 meters may have to be left on the windward edges of understory areas if required.
- Rub stumps may be utilized around patches of understory to protect them during skidding operations.





Medium Understory (250 – 500 stems/ha.)

- Detailed block plans may be prepared for company contractors if deemed necessary by the logging supervisor.
- Buncher may determine a skid trail location by placing bunches with the butts facing the road to avoid turning trees.
- Skid trails will be spaced approximately 30 meters apart with +/- 5 meter – wide strips of aspen left between every third and fourth trail to provide protection for the understory. These strips must be 80m back from the road where the chipper is to be located.
- In some instances rub trees may be utilized.
- Skidder traffic will not be permitted off the trails that bunches have been placed on.
- Operations will attempt to leave more standing timber within 70 meters of the windward side of the block.
- Operations will attempt to place roads and decking areas within the block with the least amount of understory.
- Roads will be flagged prior to operations commencing.
- Harvesting of skid trails may be restricted to daylight hours only to aid in the identification of understory area boundaries.
- Boundaries of cut blocks will be harvested first. In patches of understory, the trees may have to be felled outside the blocks to avoid turning trees.
- A buffer of up to 10 meters may have to be left on the windward edges of understory areas if required.
- Pure patches of coniferous understory will not be harvested; trails will be located through them if required.

Heavy Understory (500+ stems/ha.)

- Skid trails will be laid out 30 meters apart with +/- 5 meter – wide strips of aspen left between every third and fourth trail to provide protection for the understory.
- Block boundary will not be cut first; the bunchers will cut each trail until the block boundary is reached.
- Dependant on the density of the understory, bunchers may be permitted to harvest the boundary falling the trees outside of the block as they travel to the next strip. If this is not possible due to density, the bunchers will return down the same trail to the road.
- Bunches will be placed with butts facing the road.
- Skidders will back up the trail and skid the logs to roadside.
- Along either side of the road understory will not be protected to allow for decking space.
- To minimize potential for damage resulting from winds parallel to block roads, strips of uncut timber will be left that extend to the road. The strips will be placed in areas that won't conflict with decking operations. This will be dependant upon block orientation, shape, size, soil conditions and understory height.
- Roads and decking areas will be laid out prior to the commencement of operations.
- Operations will be permitted 24 hours a day.
- A buffer may be left on the windward side of understory areas.





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Peace River Pulp Division

ENVIRONMENTAL MANAGEMENT SYSTEM
UNDERSTORY OPERATING GUIDELINE

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ALL

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