



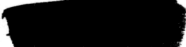
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March 5, 1999



Quesnel, British Columbia



Dear 

Enclosed for your information is a document entitled "Stand Level Biodiversity Guidelines for the Quesnel Forest District".

This document has been prepared by Ministry of Forests staff in cooperation with habitat protection staff of the Ministry of Environment, Lands and Parks (MELP). It is intended to provide guidance to prescribing foresters who are developing prescriptions for timber harvesting in the Quesnel Forest District.



The document is also intended to fulfil a commitment made by Herb Langin, MELP Regional Director, to  that guidelines for wildlife tree patch establishment would be in place by March 15, 1999.

I would like to stress that this document is intended to assist, not direct, prescribing foresters.

Please direct any comments or questions to the undersigned.

Yours truly,



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Stand Level Biodiversity Guidelines for the Quesnel Forest District

1.0 INTRODUCTION

These guidelines are established to address the requirements of the *Forest Practices Code of British Columbia Act* (FPC) and the practices recommended in the Biodiversity Guidebook. The guidelines will remain in effect until landscape units and landscape level biodiversity objectives are established for the Quesnel Forest District.

Biodiversity management is part of sound forest management practices. Prescribing foresters are encouraged to discuss stand level biodiversity strategies with Ministry of Environment, Lands and Parks (MELP) Habitat Protection staff.

2.0 DEFINITIONS

Gross Block area

- Includes all internal and eligible adjacent reserves.
- This is the area used for advertising a Silviculture Prescription (SP) and Stand Management Prescription (SMP), and for biodiversity calculations.

Cutblock area

- The Cutblock Area is defined in the Determining Cutblock or Opening Size section of the Green-up Guidebook.
- The Cutblock Area is essentially that portion of the block that is being developed for harvesting. This does not include peripheral reserves outside the cutblock boundary, but does include all internal Riparian reserves, Wildlife Tree Patches (WTPs), and non-productive (NP) areas less than 1 hectare.

Eligible area

The area that will contribute towards the biodiversity calculations for individual cutblocks. It will be the summation of all of the categories of WTP eligible areas described below for each block, and include applicable Lakeshore and Riparian reserves.

3.0 BOUNDARY MARKING

- Map and GPS (traverse) all proposed reserves within the cutblock that are equal to or greater than 0.25 ha in size and shown on SP and any required Logging Plan (LP). Reserves smaller than 0.25 ha in size and single wildlife tree retention must be identified and described on the SP, but do not require mapping.
- Adjacent reserves that are not within the Cutblock Area must be adequately tied into natural features (e.g. streams or wetlands) to ensure reasonably accurate mapping. These adjacent reserves must be accurately located when the surrounding area is scheduled for harvesting.

4.0 COARSE WOODY DEBRIS

Actions to maintain coarse woody debris are to be specified in the SP as required by Section 39(3)(m)(i) of the Operational Planning Regulation. Current utilisation standards are considered adequate to meet minimum coarse woody debris requirements. The following are considerations for enhancing coarse woody debris management:

- Leaving deciduous stems to contribute to coarse woody debris in the future.
- Leaving dead and down trees in Riparian Management Areas unless these create a forest health concern.
- Leaving felled hazard trees on site unless there are overriding forest health issues.
- Leaving large debris and partly decayed logs that do not require removal under the utilisation standards. These should be left on the block as they do not generally present a problem to planters or substantially affect plantable spots, yet they are of high value for soil nutrition and small mammals.
- Leaving Grades 3, 4, and 5 wood on the block unburned, where the cutting authority does not require its utilisation.
- Leaving small piles of large diameter debris or unburned slash piles.

Landing Debris pile characteristics which result in good wildlife habitat:

- composed primarily of large diameter pieces (15+ cm), criss-crossed so as to create cavities within the pile.
- dimensions should be about 3 meters wide, 6 meters long, and 3 meters high. Larger and smaller debris piles are less used by wildlife, and larger piles occupy plantable space.
- preferably within 30 meters of mature timber.
- preferably near riparian areas.

Dispersed Small Mammal Piles:

- these debris piles are being successfully used in 100-Mile F.D.
- buncher operators place a "bunch" of three or four whole trees (deciduous or waste) on the ground, with the trunks parallel.
- the branches in combination with some overlapping of the trunks create cavities, summer and winter, that are extensively used by small mammals and fur-bearers.
- if disc-trenching is planned and the pattern of trenches can be predicted, the trees should be laid parallel to the trenches so that the weasel huts can be maintained between them.
- the type of pile informs skidder operators to leave them out in the block, rather than taking the waste wood to the landing.

5.0 WILDLIFE TREE PATCHES

The district manager has determined that the percentage of a cutblock area required as wildlife tree patches from Table 20(b) of the Biodiversity Guidebook be set at 9 %. This determination is supported by the *Forest Practices Code Timber Supply Analysis, February 1996*.

The requirement for wildlife tree patches may be applied to the individual cutblock or at the cutting permit level where forest management concerns limit options at the cutblock level.

All Workers Compensation Board requirements must be met while working adjacent to WTPs.

WTP Identification and Distribution

- WTPs should be composed of trees which represent the size, structure and species found in the mature component of the stand, and should include the upper 10% of the diameter distribution to over-represent the stand's highest value wildlife trees.
- WTPs should follow a natural, windfirm boundary. Straight edges and rectangular shapes should be avoided.
- Riparian reserves and other suitable reserve areas which are within or immediately adjacent to the cutting boundary should be selected as WTPs, if they meet the other WTP criteria.
- A 500 metre maximum distance between WTPs and/or mature forest should be adhered to unless there are overriding forest management concerns. Only WTPs greater than 0.25 hectares are considered sufficient to address the 500m maximum distance requirement. MELP staff should be consulted where the Licensee proposes a variation from the 500 metre requirement, and a rationale provided in the SP.

Dwarf Mistletoe

- Choose areas of lightest infestation for WTPs. Mixed wood patches are favoured in areas of heavy infestation.
- Establish WTPs on the edge of the cutblock and minimise the edge against the cutblock boundary.
- Where in-block WTPs are required to meet the "500 meter rule", these should be kept as round as possible to minimise the edge effect. Few larger WTPs are better than many smaller ones. Girdling of a 5 to 10 meter ring around the WTP or planting non host species may be options to reduce re-infection of crop trees.

Bark Beetles

- Non infested areas, or patches of red or grey attack, should be the first choice for WTPs.
- Select less susceptible timber types for WTPs where they are available.

Root Rots

- For *Armillaria*, select root rot areas as patches if they are identifiable.
- For *Tomentosus*, leave infected trees for future snag recruitment.

Windthrow Prone Areas

- All WTPs should be located on the most windfirm areas possible. The establishment of a management zone for feathering and/or crown thinning may be required to protect the integrity of the WTPs. Position WTPs in the least exposed areas along the edges of the cutblocks.
- In areas of high blowdown potential, larger, more wind firm WTP reserves may be left on some blocks while no, or limited, WTP reserves may be left on others (still to average out to 9 % over the Licensee's cutting authority area) where the 500 metre rule is met through block boundary design. This also applies to areas with significant forest health concerns, where larger reserve areas with less disease or insect infestation should be selected as WTPs.
- It is recognised that the 500m distance rule may be compromised in some circumstances and other treatments, such as stubbing and deciduous wildlife tree retention, should be used to compliment the WTPs.
- Even with careful planning, post logging blowdown events may occur in riparian or WTP areas. The decision to conduct salvage harvesting should be based on the contributing value of the blowdown for wildlife habitat and coarse woody debris, and on the potential forest health concerns.
- MELP should be consulted regarding wildlife values of WTPs and Riparian Management Zones when developing harvesting proposals, and MELP approval is required for harvesting within Riparian Reserve Zone areas.

Broadcast Burning near WTPs

- The use of broadcast burning for site preparation complicates the management of WTPs. As much as possible, cutblocks should be laid out to locate WTPs adjacent to the boundary while still meeting the 500m maximum distance to suitable habitat requirement.
- In block WTPs should be located in a manner that allows for protection of the WTP during the prescribed burn.

WTP Replacement

- Identification of replacement WTPs may required where the original WTPs are compromised by windthrow, prescribed burning or other damage. MoF and MELP should be consulted during identification of replacement WTPs.

Eligible area calculations for WTPs

(1) Productive areas

- WTPs that are required in addition to the forested riparian reserves must be representative of the mature forest cover contained in the general cutblock area while still meeting the characteristics of WTPs described in the Biodiversity Guidebook. Biodiversity reserves should aim at containing **representative amounts** of mature timber types with emphasis on the larger tree sizes.
- A WTP may be centred around a feature such as NCB_r and encompass adjacent mature timber. The timbered area, excluding the NCB_r will be considered as "eligible area".
- In general, WTPs located in the upland area adjacent to riparian areas are considered to be of higher value for biodiversity.

Note: Patches of immature timber should only be included as WTPs, or as part of a WTP, where no other options exist. Otherwise, they are part of the next pass.

(2) Non-Productive areas

- As above for productive areas, a WTP may include a **small** unclassified treed wetland that is surrounded by a timbered reserve or a treed black spruce swamp. However, wetland areas without forest cover will not be counted towards the WTP requirements.
- Another example of acceptable WTP areas are *forested* rocky areas, steep inoperable gullies or wet areas with minimal timber values. The timber contained within these rocky areas, as well as that dispersed through NCB_r areas, can often be the most wind firm.

(3) Single Dispersed Wildlife Trees, Non-Mappable Clumps & Group Reserves.

- Small clumps of trees, or individual trees, can be quantified by stating the total basal area that will be retained over the block or within the Standards Units. The SP must clearly describe what tree species and ages/diameters comprise these non-mappable clumps or single trees. This area will count directly as eligible WTP area (as calculated in below for partial cut areas), providing it is consistent with overall stand characteristics.
- Small non-mappable clumps (<0.25 ha.) and single trees contained within the block (including RMZ's) count towards the stand level biodiversity retention percentage, but are not sufficient to address the 500m maximum distance between WTPs.

Note: A maximum of 50% of the WTP requirements for a block can be made up of various combinations of single trees, group reserves and stubs. However, if the dispersed trees and stubs are all deciduous the maximum portion of WTP requirements made up of dispersed wildlife trees and stubs is reduced to 25% .

(4) Stubbed trees

- Tree stubs will count towards the biodiversity calculations at 1/2 of the basal area equivalent described above for dispersed trees. Tree stubs are of shorter usefulness in relation to live trees, but may be a viable alternative in some blowdown prone areas.

(5) Partial Cut Areas

- For RMZ's and other areas that are partial cut or selectively logged, the residual basal area can count towards the calculation below **if a minimum amount is committed to in the SP** (e.g. 10 to 20 m² basal area to be left in an RMZ should have the 10m² figure used; 30-50% basal area retention should have 30% used).
- A selectively logged block will require a Stand and Stock table for the SP and this will be used for the calculations. For true uneven-aged management, the **minimum basal area that is to be retained following the initial and future harvest entries** (cutting cycles) will be utilised for the calculation below.
- For shelterwood systems, partial cutting, etc., the residual basal area (BA) will only count towards biodiversity if the residual trees are not scheduled for future removal until the next rotation.
- A snag component must be retained in partial cut areas in a manner consistent with WCB regulations.
- If 10% or less of retained individual trees blow down later, they may be salvaged without need to replace the WTP area.

Partial Cut eligible area calculations:

$$\text{Eligible area (ha)} = \frac{\text{Minimum residual BA/ha} \times \text{applicable area (ha)}}{\text{Total Basal Area/ ha}}$$

OR

$$\text{Eligible area (ha)} = \text{Min \% BA retention} \times \text{applicable area (ha)}.$$

6.0 STRUCTURAL CHARACTERISTICS OF NATURAL DISTURBANCE

This section applies to openings greater than 60 ha that are approved under OPR 11(3)(b)(i)(A) for salvage of mountain pine beetle attacked timber, and, in some cases, windthrown timber. Fir beetle and spruce beetle attacks may also occasionally result in openings greater than 60 ha. Only Natural Disturbance Type 3 areas are considered here.

Wildlife Tree Patches

Natural disturbances usually result in patches of unaffected forest being left scattered over the landscape. In NDT 3 these are more frequently associated with riparian areas than upland areas, but some upland areas are also left.

- Wildlife Tree Patches should be located both within and adjacent to the cutblock, in both riparian and upland areas.
- WTPs should where possible consist of non-susceptible species, such as spruce or Douglas-fir. Deciduous species may be used to augment conifer species for WTP requirements.
- If only susceptible species are present, then WTPs should be located in patches of red or grey attack (where WCB concerns permit) or in non-attacked or lightly (< 10%) attacked susceptible stands. If a few green attack trees are present in the WTP they can either be left (if there is no susceptible timber remaining nearby) or removed while minimising disturbance to the WTP.
- As much WTP area as possible should be internal to the block, to average with blocks where internal WTPs are minimal or absent due to lack of opportunity resulting from beetle infestation or windthrow.

Tree Retention other than in WTPs

Natural disturbances usually result in the retention of many scattered living and dead trees. All of the following should be considered for retention as part of the structural characteristics of natural disturbances in NDT 3, where they are viable options:

- Mature or veteran Douglas-fir or spruce;
- Individual trees or patches of deciduous;
- Unmerchantable, advanced regeneration or immature types.
- Red or grey attack trees, and snags that can be retained in a safe manner.
- Stub large diameter dead or dying trees that are dangerous to leave. Tree stubs are of shorter usefulness in relation to live trees, but are a viable alternative in the absence of leaving the entire tree. The greatest use of stubs by wildlife and birds appears to be on the edges of riparian areas, adjacent to timber edges, or areas of advance regeneration or immature types. Clumps of stubs are more valuable than stubs scattered throughout the block, although individual stubs have some value.

Coarse Woody Debris

Natural disturbances usually result in large amounts of coarse woody debris being left, especially after a bark beetle epidemic.

- Extra effort, over and above that for normal blocks, should be made to maintain Coarse Woody Debris across the block or in piles.

Access Management

Natural disturbances are characterised by little or no motorised access during and after the disturbance. This is not entirely achievable during forest harvesting and silviculture, but some considerations are:

- Design road layouts to maximise the opportunity for road deactivation to result in limited vehicle access.
- Leave stumps and other large debris along in-block roads during construction, and then pull it back onto the road as coarse woody debris during road deactivation.
- Minimise the time between road construction and road deactivation.
- Minimise the duration of harvest and related silviculture activities, to minimise the time to road deactivation.
- Design road deactivation in two or more phases, with in-block branch roads deactivated to limit access immediately after harvest and roads required only for silviculture deactivated to limit access immediately after silviculture obligations are met.
- Assess options for an access control point for any new branch roads. There should be every effort made to minimise new driveable roads.

7.0 BIODIVERSITY SUMMARY

Prescribing foresters should be prepared to submit a calculation sheet, if requested by the district manager, in which the biodiversity eligible area calculations are clearly shown. The total eligible area for biodiversity (a summation of all the above WTP eligible area categories for the block plus the applicable Lakeshore and Riparian Reserve areas) should be identified for each block. Only *forested* area should be included in the calculations. This total eligible area will be related to the Cutblock Area when determining the percentage retention.