



Ministry of
Forests

Operations Division

MEMORANDUM

File: 112330-20/Coarse Woody Debris

MAY 03 2000

To: All Industry Associations
Regional Managers, MoF
District Managers, MoF

From: Greg Koyl
Assistant Deputy Minister
Operations Division

Re: Coarse Woody Debris (CWD) Short Term Strategy

I am pleased to announce that the attached Short Term Strategy for CWD has now been finalized, from a stakeholder review initiated by Janna Kumi's letter of January 12, 2000. This strategy is now ready to be implemented throughout the province. This strategy is not a legal document and should be used with flexibility and professional discretion in mind to balance ecological and economic considerations and to meet Forest Practices Code requirements for CWD.

The short term strategy for CWD management consists of: 1) a clarification of the present policy and legal requirement for CWD management, 2) guiding principles and management considerations that will increase the likelihood of maintaining CWD at no extra cost or timber supply impact, and 3) a commitment to assess the CWD situation in the field and revisit the guidance within three years.

Kamloops Forest Region has already started implementing this strategy and the other forest regions will begin soon. Your participation, as industry stakeholders, in the implementation of this strategy, is vital to improve CWD management practices and develop innovative solutions. I encourage your collaboration to ensure this CWD initiative succeeds.

Any questions or comments regarding the strategy can be directed to Nancy Densmore at Ministry of Forests, Forest Practices Branch, (email Nancy.Densmore@gems2.gov.bc.ca phone 250 356-5890 or fax 250 356-5909).

Greg Koyl
Assistant Deputy Minister
Operations Division

Attachment: 1

cc: Jon O'Riordan, ADM, Environment and Lands Regions Division, MELP
Regional Directors, MELP
All Forest Ecosystems Specialists, MELP
BC Environmental Network Forest Caucus
United Salvage Loggers Association of BC
Residue Value Enhancement Association
East Kootenay Environmental Association

A Short-term Strategy for Coarse Woody Debris Management in British Columbia's Forests March 2000

1. Background

Coarse woody debris (CWD) is an important component of forests and is linked to biodiversity and ecosystem processes. CWD provides centres of biological interaction and energy exchange, symbolizing in many ways the complexity of forest ecosystems. Long-term management of this resource is vital to maintain ecosystem integrity. For operational purposes CWD is defined as material greater than 10 cm in diameter, in all stages of decay and consists of above-ground logs, exposed roots and large fallen branches.

Previous attempts to recommend province-wide CWD management practices were not successful because of the potential for increased logging costs and conflicts between utilization standards and recommended CWD volume targets. It was decided to give priority to the utilization standards but to adapt practices to minimize the impact on CWD ecology. The issue of CWD management is complicated and cannot be addressed all at once. In order to reduce the administrative and economic burden on the forest industry, and to create environmental standards, a strategy for CWD management has been developed after extensive consultation with forest industry, MoF and MoELP staff.

The general nature of this strategy reflects our present knowledge of the ecological functions of CWD in natural and managed stands. The intent is that this strategy will be used with flexibility and professional discretion to balance ecological and fiscal considerations. A collaborative effort to fill information gaps is vital to fine-tune CWD management practices. In particular, information is needed regarding the natural history of organisms using or dependent on CWD, the connection between CWD and forest productivity and the levels of risk associated with maintaining greater or lesser volumes of CWD.

This strategy consists of:

- 1) A clarification of the present policy and legal requirement for CWD management,
- 2) An education component; guiding principles and management considerations that will increase the likelihood of maintaining CWD values at no extra cost or timber supply impact,
- 3) A commitment to assess the effect of present forestry practices and policy on CWD management over the next three years.

1.1 Present policy framework

The 1995 policy is that utilization standards will take precedence over requirements for coarse woody debris. The new strategy, as outlined in this document, is to maximize the ecological value of the CWD chosen to be left on site considering:

- Current utilization standards,
- Avoidable waste bench marks set January 1999, and
- Management for CWD without increasing logging costs.

Wood below utilization standards is therefore available for CWD or available for harvest when economic conditions merit this. The term "uneconomic wood", as used in this document, therefore refers to wood below utilization standards and/or wood with no economic value. CWD or high stumps, above standard timber utilization requirements that are left on a block (as specified in a silviculture prescription or where cumulative volumes are less than the benchmarks stated in the January 1, 1999 policy amendment) will be charged to cut control but monetary penalties will not apply.

Clarification on the legal requirements for CWD management

The licensee proponent is required by law to include CWD management objectives in the Forest Development Plan (FDP). CWD management objectives in FDPs may be qualitative or quantitative, but must be consistent with requirements specified in any Higher Level Plans for the area. Silviculture prescription objectives are consistent with the FDP.

1.2 Educating field operators on the ecology and management of CWD

The success of the proposed strategy resides on the ability of field personnel to make the appropriate decisions in the field. Therefore an important component involves educating field staff about the ecology of CWD and best management practices. The contribution by the present document will be complemented by CWD management workshops in the field and the development of demonstration areas.

1.3 Assessment of CWD management

An adaptive management framework will be used to rigorously evaluate a range of prescriptions for CWD management. Licensees, MoF and MoELP will work collaboratively to establish a number of pilot projects to assess and monitor environmental, economical, and operational indicators in a number of pilot projects across the province (Please see appendix 1). Over the next three years the information gathered through this assessment will help to determine if other guidance on CWD management is necessary and to assess the ecological impact of the present policy.

The following guiding principles are for use in developing CWD objectives in FDPs and HLPs. Prescription considerations and CWD management tips are also provided to assist in developing silviculture prescriptions.

2. General considerations for CWD management

2.1 Guiding principles

The following are principles that provide a decision-making framework for CWD management.

1. Minimize CWD accumulations, especially on landings and roadsides, bearing in mind that some accumulations will be inevitable for reasons of safety and operations. Some small CWD piles dispersed in cutblocks may be appropriate to provide valuable habitat for some mammals.
2. Larger pieces of CWD are more valuable than smaller pieces — they last longer, hold more moisture, are useable structures for a greater number of organisms.
3. Ecologically, it is advantageous to maintain the full range of decay and diameter classes of CWD on every site — different functions and ecosystem processes require CWD in different stages of decay.

4. Coniferous material lasts many times longer than deciduous material and therefore remains part of the useable structure of a stand for a much longer period of time. However, the faster decay rate of deciduous CWD likely provides significant short-term ecological benefits. Retention of a diversity of species is advantageous.
5. CWD can be managed in conjunction with wildlife trees and other constrained or reserve areas. Standing live and dead trees and/or stubs retained on cutblocks represent important sources of CWD recruitment.
6. CWD has additional value in riparian areas, which are a valuable habitat resource for many species of wildlife. CWD entering or falling across a stream produces habitat for fish, invertebrates and vegetation. Most importantly, it contributes to stream geomorphology. Excessive amounts of fine woody debris can have negative effects on stream biology.
7. Manage the composition and arrangement of CWD within acceptable levels of risk of wildfire, insect pest and forest disease outbreaks.
8. Harmonize the retention of CWD with all other silvicultural objectives.
9. Maintain variability in the levels of CWD at the landscape level. The natural distribution and amounts of CWD will vary according to biogeoclimatic gradients, stand types, and stand development history. Although the natural distributions of CWD cannot be mimicked exactly it is important that CWD management captures landscape variation and site-specific variations through different management practices.

2.2 Potential Sources of CWD

Existing sources of CWD

In many cases, logs already lying on the forest floor are left after harvesting. This constitutes an obvious source of CWD. In addition, all other uneconomic wood resulting from harvesting (such as breakages, short pieces, tops, and low-grade timber) also provides existing sources of CWD. When the intent is to leave these behind as CWD, harvesting should be planned to minimize damage to these pieces.

Sources of CWD recruitment

Ensuring that large pieces of CWD will be maintained through several rotations will be a challenge. It would be wise to plan ahead and identify "low cost sources" of CWD recruitment. Long-term CWD recruitment may be addressed by leaving reserves and wildlife trees, possibly including cull trees. Stubbing (leaving high stumps, often several metres in height) may be used to complement these reserves either because there are few retained trees or because they are restricted to portions of the cutblock.

Reserves and wildlife trees

The following potential sources of CWD recruitment are already being retained to meet biodiversity and riparian area management objectives:

- Wildlife Tree Patches (WTPs) or dispersed wildlife trees (green trees, stubbed trees, and standing dead trees).
- Riparian Management Zones (RMZs).

Recent Workers' Compensation Board regulations allow for the retention of some standing dead trees (snags) in forestry operations (harvesting and silviculture phases). These trees will

complement the green tree reserves for CWD recruitment. The trees planned for retention must be declared safe by certified individuals.

Training staff to identify defective green trees, which represent no economic value, and are below specific utilization standards, is a cost-effective option for providing new sources of CWD.

Stubbing during harvesting

Stubs provide an immediate potential source of wildlife habitat and a future source of CWD and may be used to complement wildlife tree retention. Stubs with defects such as heart rot have a high wildlife habitat value, are generally non-merchantable and below utilization standards. As a result, stubs often provide an opportunity for both wildlife habitat and operational cost savings.

Standing volume left on site from stubbing will not be charged to cut control, provided the resulting "high stump" does not meet utilization standards and/or its retention for wildlife tree retention requirements is specified in the appropriate SP and cutting authority.

3. Setting and evaluating FDP objectives

Some general objectives of CWD management are to:

1. Reduce the number and size of CWD accumulations on roadsides and landings by leaving CWD distributed throughout the cutblock
2. Reduce the incorporation of large CWD pieces in the remaining accumulations.
3. Provide sources of CWD recruitment.
4. Link these practices with other forestry operations such as salvage logging.

Licensees are encouraged to consider these objectives, among others, when establishing the CWD objectives for their FDPs. Whether these objectives have been met can be assessed in general terms by asking the following questions:

1. Does the setting include distributions of CWD, throughout the block?
2. Compared to past operations are there fewer accumulations and are these accumulations smaller (in width and height)?
3. Are there large uneconomic CWD pieces in the accumulations?
4. Does the setting include sources of CWD recruitment over the rotation? How are these distributed over the setting?
5. What potential effect will post-harvest activities have on CWD sources over the rotation?

4. Prescription considerations

4.1 Linking CWD management with biodiversity objectives

When planning WTPs or dispersed wildlife trees, consideration should be given to CWD recruitment across the cutblock, within the context of potential windthrow and management of other ecological components or species. Where windthrow is not an issue and CWD levels are minimal, consideration should be given to scattering wildlife and stub trees across the cutblock.

However, larger patches of wildlife trees should be left when managing for specific species requiring CWD and forest interior conditions.

4.2 Linking CWD management with risk management

Bark beetles

The risk of bark beetle activity should be evaluated where wildlife trees blow down or if many large live trees are felled and left in place. If fallen trees are near an existing infestation, preventative actions may need to be taken, particularly with Douglas-fir and spruce. The actions will depend on the risk of spread of bark beetles, the value of the timber, the value of the CWD, current forest health practices by the licensee, and the impact of different actions to the standing trees.

The level of risk to timber is determined by the probability of bark beetle damage (based on the susceptibility of the stand and the proximity of existing beetle infestations). Refer to the bark beetle management guidebook for further information on hazard/risk rating criteria.

Forest diseases

It is unlikely that CWD retention will encourage forest diseases.

Fire hazard

Fuel management plans are no longer required under the Forest Practices Code. However, the *Forest Fire Prevention and Suppression Regulation* states that a person who, on Crown or private land that is in a Tree Farm Licence or a Woodlot Licence, harvests timber or carries out a prescribed activity must assess the fire hazard existing on that land. Fine fuels pose the primary fire hazard associated with woody debris less than 7.5 cm in diameter. Prescribed burning can remove these fine fuels and have minimal impact on CWD.

4.3 Linking CWD management with salvage operations

Catastrophic and incidental disturbances

When stands affected by catastrophic disturbances are salvaged, efforts should be made to ensure a good distribution of CWD over the area. Care is necessary when contemplating salvage operations within wildlife tree reserves or riparian buffers. In cases where salvage is required for risk management in wildlife tree reserves, consideration should be given to designating an equivalent replacement area.

Retaining incidental windthrow in sensitive ecosystems such as riparian areas and WTPs will ensure long-term CWD recruitment within these areas.

Small-scale Salvage Program

The Small-scale Salvage Program removes standing dead and downed trees from harvested areas. The recovery of this material poses a potential risk to the biodiversity values provided by wildlife trees and CWD.

However, the integration of CWD management within district procedures for small-scale salvage will help minimize this risk. These procedures may include:

- Designation of high value habitat.
- Identification of areas of access and operation.
- Instructions controlling any salvage from sensitive ecosystems such as WTPs and RMZs.

- Information on locally important CWD and wildlife tree values.
- Safety concerns.

4.5 Linking CWD with site preparation, reforestation, and stand tending

Management of harvest and post-harvest activities should minimize adverse impacts on CWD. The main objectives are to avoid piling CWD, avoid damaging CWD with heavy machinery or broadcast burning, and plan stand-tending activities to ensure some CWD recruitment.

Site preparation

- Minimize piling and windrowing. If piling, minimize pile sizes. Mix piling with scattered debris and avoid placing large pieces in piles unless they are required for specific wildlife species.
- Minimize burning of piles and accumulations, but do not create undue fire or forest health hazards.
- Use techniques other than broadcast burning to reduce fire hazard and create plantable spots. If broadcast burning, burn under conditions which remove fine fuels (needles, twigs and small branches) but maintain CWD and the organic soil layer.
- Wherever possible, maintain CWD in place. Don't disturb or break it up with heavy equipment.

Reforestation

In some special circumstances it may be appropriate to modify stocking standards to meet CWD objectives due to debris accumulation and reduction of plantable spots. Options include:

- Modifying target-stocking levels.
- Modifying the minimum allowable distance between trees.
- Utilizing clumped planting patterns.

Stand tending

To ensure creation of CWD over the life of the stand and in the future:

- Designate WTPs in spacing and commercial thinning areas.
- Use variable spacing density within stands.
- Minimize removal of non-competing deciduous species.

5. CWD management field tips

The following have been employed to manage CWD in different parts of the province. They may not necessarily be applicable to all situations but provide several options and perhaps a template, which foresters can use to innovate and develop other solutions that would be more suitable to specific situations.

Bucking on site

An approach to avoid CWD accumulations on landings is to buck on the site rather than at the landing. This approach can be applied over the whole cutblock or over a portion.

Delimbing and topping

Where whole tree harvesting is carried out, CWD levels can be increased by delimbing and topping on site rather than at landings and roadsides.

Leave cull trees standing

Trees (live or dead) which have obvious defects are often referred to as cull trees and will usually produce low-grade lumber. In many cases the costs of harvesting and manufacturing outweigh any economic gain, making cull trees ideal candidates for CWD recruitment. Identifying cull trees during operations as potential sources of wildlife tree and recruitment CWD is a good example of improving CWD management and reducing logging costs. The major types of defects are forks, multiple tops, spiral grain, extensive rot, insect damage and various scars.

Avoid yarding uneconomic wood to landings and roadsides

Yarding uneconomic wood to landings and roadsides reduces its ecological and habitat values and can incur added costs. Yarding uneconomic wood should be avoided, as it may be expensive and time-consuming to redistribute this material back onto the setting.

Reduce the number of empty trips

Redistributing CWD has been successful in blocks with very little initial CWD volume. When the burning of cull and debris piles is eliminated or lessened, costs may be reduced. Licensees will want to determine if redistribution of uneconomic wood should be done over the entire cutblock or only on a portion of it. To help facilitate the redistribution of uneconomic wood back onto the cutblock, the buckers might be able to place pieces of uneconomic wood in a pile easily accessible to the skidder. As the skidder comes to the landing, the operator will be able to release a load of incoming logs, grab a turn of uneconomic wood and return it to the cutblock.

The general approach of returning uneconomic wood during operations can also be used in conjunction with some grapple yarding operations where safety considerations and terrain permit. Communication with the yarding crew to identify uneconomic wood is an efficient means of improving CWD retention on the setting.

Appendix I.

Proposed actions for the Assessment of CWD management

1. Assess current status

Evaluate the effect of present management practices on levels of CWD (abundance and distributions) within and across stands.

2. Identify current and future problem areas

In the context of the information gathered identify ecosystems where CWD management appears to be a problem immediately or in the future.

3. Pilots

Identify and evaluate approaches to achieve CWD abundance and distribution levels (including the development of methods for setting quantitative CWD retention targets) and implement these approaches on a trial/pilot basis where CWD abundance and distribution, logistic issues and costs are monitored.

4. Review FDP and SP objectives.

In the context of the information gathered above review FDP and SP objectives.