BRITISH COLUMBIA

Ministry of Forests, Lands and Natural Resource Operations

Timber Pricing Branch

MEMORANDUM

File: 195-30/RWMM
Cliff: 178577

July 11, 2011

BY EMAIL

To: Regional Executive Directors

From: Murray Stech
Director
Timber Pricing Branch

Re: Amendment No. 19 to the *Provincial Logging Residue and Waste Measurement Procedures Manual*

I hereby approve Amendment No. 19 to the *Provincial Logging Residue and Waste Procedures Manual*, and attach a copy for your use. The following sections have been amended:

Section 1.2.6	Correct manual section references.
Section 1.6.2	Housekeeping changes.
Section 3.3.1	A new section is added to provide field standards for conducting oculars. This is in response to Forest Practices Board audit that suggested minimum standards could be developed for consistency purposes without increasing costs.
Section 6.3.1	A change is made to include both avoidable and unavoidable volumes on the check surveys.
Appendix 2:	Applicable only to the coast. Standing stem harvesting (by helicopter) is changed to have waste volumes determined by cut/cruise methodology.
Appendix 6:	Provides a method for measuring fractured bucking waste on the coast.

This amendment comes into force on July 15, 2011.

for Murray Stech
Director
Timber Pricing Branch

Attachment

Ministry of Forests, Lands and Natural Resource Operations

MANUAL REVISION TRANSMITTAL

FOR FURTHER INFORMATION OR IF YOU HAVE A CHANGE OF ADDRESS, PLEASE CONTACT:	**MANUAL TITLE** Prov. Logging Residue & Waste Measurement Procedures Manual	
John Wai Residue Forester and Log Salvage Policy Forester Timber Pricing Branch Ministry of Forests, Lands and Natural Resource Operations 1 Floor, 1520 Blanshard Street Victoria, BC V8W 3K1 Phone: 250-356-7671 Email: John.Wai@gov.bc.ca FAX: 250-387-5670	**AMENDMENT** Amendment No. 19	**ISSUE DATE** July 15, 2011
	MANUAL CO-ORDINATOR Judy Laton Publications/Administative Co-ordinator	
	AUTHORIZATION (Name, Title) Murray Stech Director, Timber Pricing Branch	

Please make the following changes to your copy of the above Ministry manual.

ACTION (Remove/Insert)	(VOL.) CHAPTER-SECTION-SUBJECT TABLE OF CONTENTS	PAGE(S)	COMMENTS
REMOVE	Table of Contents	i - viii	After Table of Contents Tab
INSERT		i - viii	
REMOVE	Chapter 1	11 – 12, 21 - 22	After Chapter 1 Tab
INSERT		11 – 12, 21 - 22	
REMOVE	Chapter 3	5 - 10	After Chapter 3 Tab
INSERT		5 - 10	
REMOVE	Chapter 6	5 - 6	After Chapter 6 Tab
INSERT		5 - 6	
REMOVE	Appendix	7 – 22	After Appendix Tab
INSERT		7 - 18	
INSERT	Letter from Murray Stech, Director Transmittal Sheet		After Amendments Tab

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1.2.2 Rationale

The right to harvest Crown timber is granted in the form of agreements under the *Forest Act.*

The licensee has the discretion of whether or not to harvest the timber from the agreement area subject to the forest management standards required.

Pursuant to the *Forest Act*, an agreement holder must pay stumpage for timber that was harvested.

Under the *Forest Act* and the agreements, the licensee must pay a waste assessment for merchantable timber not harvested and for timber deemed to be wasted.

1.2.3 Definitions

“Waste” means timber, except timber reserved from cutting, whether standing or felled, which meets or exceeds the timber merchantability specifications described for the Coast and the Interior in this manual that was not removed from the cutting authority area.

“Unavoidable waste” means waste that:

i) is inaccessible or physically obstructed;

ii) could not be felled, bucked or removed due to safety or environmental reasons.

“Avoidable waste” means waste that does not fall within the definition of unavoidable waste.

"Merchantable timber" means timber that meets or exceeds the timber merchantability specifications that are described in Table 1-1 for the Coast and in Table 1-2 for the Interior in this manual. Timber that is graded dry Y (5) or Z (Coast), graded dry 4, 6 or Z (Interior) is not merchantable.

“Timber Merchantability Specifications” means stump height and diameter, log top diameter, slab thickness and log length described in this manual for the Coast and the Interior.

“Waste assessment” means an assessment conducted in accordance with the procedures set out in the *Provincial Logging Residue and Waste Measurement Procedures Manual* for determining the volumes of merchantable timber and waste left on a harvested area following completion of primary logging.

“Waste benchmark” means the volume of avoidable waste, expressed in cubic metres per hectare, that can be left on a harvested area without being subject to a monetary waste assessment.

1.2.4 Monetary Billings

Subject to the waste benchmarks described in Appendix 5, the avoidable waste volumes are billed as follows.

1.2.4.1 Coast

The avoidable conifer grade X, Y and grade U hemlock and balsam waste volumes are billed at $0.25 per m^3.

Dead/dry grade Y (grade 5) timber not removed from the harvested area is not measured in waste assessments.

The avoidable coniferous sawlogs Grade J or better hemlock and balsam and grade U or better for all other species waste volumes are billed at the average stumpage rates determined in Appendix 3 of this manual.

1.2.4.2 Interior

The avoidable waste volumes of grade 4, lumber reject; are billed at $0.25 per m^3.

The avoidable sawlog grades (1 and 2) volumes are billed at the average stumpage rates determined in Appendix 3 of this manual.

1.2.5 Deciduous

Deciduous species are treated the same as coniferous species for waste billing purposes. Deciduous timber within the merchantability specifications that is not harvested, is measured as waste.

1.2.6 Amount Payable

For merchantable Crown timber that is not cut and removed, the amount payable is calculated by multiplying:

a. the volumes of avoidable waste reported in a waste assessment after deducting the waste benchmark volume allowed under Appendix 5, by

b. the applicable stumpage rates as follows:

   i) Coniferous species graded:

      (a) sawlog - the rates specified in 1.2.4.1 and 1.2.4.2,

> Note: The supporting data for the timber for which waste relief is requested must be submitted by the licensee into the Waste System as a separate waste survey, prior to the waste relief application being processed. This waste survey will be kept in the Waste System in 'Submitted' status and must not be processed by District staff until after a determination has been rendered on the application for waste relief.

3. The supporting data will be submitted by the licensee into the Waste System and identified by way of a notation or comment in the waste system that the information pertains to an application for waste relief.

4. Timber Sales Manager or District Manager, as the case may be, upon receipt of the data submitted, will prepare an information package that should include:

   a. Relevant information on the cutting authority,

   b. An estimated waste monetary assessment based on the timber grade profile, on a block by block basis, and the applicable waste rates.

   c. An assessment of the opportunity for resale of the timber included in the waste relief application, including the current market value, and,

   d. A Briefing Note to the Assistant Deputy Minister, Timber Operations and Pricing Division containing a recommendation on whether or not to grant waste relief.

5. The information package will be forwarded in electronic form to the Director, Timber Pricing Branch, Ministry of Forests, Lands and Natural Resource Operations, with a copy to the Regional Executive Director and the Regional Revenue Manager.

1.6.3 Waste Relief Determination

The Assistant Deputy Minister, upon reviewing the information provided, and considering the pertinent documentation, will make a determination and notify the licensee, with a copy to the District Manager, the Timber Sales Manager (in the case of BCTS agreements) and the appropriate Regional Executive Director and the Regional Revenue Manager.

If the waste relief application is not approved, the District Manager will process the waste survey and issue an invoice for that timber included in the waste relief application.

If the waste relief application is approved, the District Manager will deactivate the waste survey submitted to the Waste System for that timber included in the waste relief application.

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3.3 Ocular Estimate (OE) Method

(1) Where the estimated volume per hectare of avoidable waste on the cutblock is below the maximum volume prescribed in Table 3-2 of this manual, the use of the OE method does not require approval of the district manager.

(2) The use of the OE method will not be permitted on a cutblock if the estimated volume per hectare of avoidable waste on the cutblock exceeds the maximum waste volume prescribed in Table 3-2 of this manual, unless the district manager determines that the use of this method will not create a significant revenue risk to the government.

Location of Cutblock	Stand Description	Maximum Avoidable Waste Volume (sawlogs)
In the Coast Forest Region	Second Growth	10 m^3/ha
	Old Growth	35 m^3/ha
In the Northern Interior or the Southern Interior Forest Regions	Dry Belt	4 m^3/ha
	Transition	10 m^3/ha
	Wet Belt	20 m^3/ha

Table 3-2, Ocular Estimate Thresholds

(3) Subject to subsection (4) of this section, the holder of an agreement may not use the OE method unless a licensed waste surveyor, licensed scaler, RPF or RFT certifies the accuracy of and submits the results of the assessment on behalf of the holder of an agreement to the district manager.

(4) The district manager may permit the holder of the agreement to use the OE method and to submit the results of waste assessment directly to the district manager without the certification required by subsection (3) of this section where the agreement held by the holder is a woodlot licence, if the district manager determines that there is not significant revenue risk to the government by receiving the results of the waste assessment directly from the holder of the agreement.

(5) Transect line or inspection plots:

(a) should be used when using the OE method and

(b) should be located in areas of the cutblock where the levels of avoidable waste reasonably represent the avoidable waste on the cutblock.

(6) Where inspection plots are used, each plot should be:

(a) Circular or rectangular, and

(b) At least 50 m^2 in size.

(7) Where a field audit conducted on behalf of the district manager determines that the waste assessment conducted by the holder of an agreement on the cutblock using the OE method does not reasonably represent the avoidable waste on the cutblock, the district manager may reject the waste assessment.

3.3.1 Ocular Estimate Field Best Practices

For the purpose of maintaining uniform standards, the following procedures are available for use in deriving the ocular estimates.

The surveyor is responsible for ensuring that the ocular estimates derived are defensible and valid for the cutblock.

The supporting ocular field data need not be submitted but must be made available when requested by the Ministry of Forests, Lands and Natural Resource Operations staff.

1. Dispersed Stratum

    a. Plots:

        - Put in inspection plots, circular or rectangular (at least 50 m^2 in size) in areas that reasonably cover the different waste types on the cutblock, or

    b. Transect:

        - Put in transect lines that provide good sample coverage of the stratum being surveyed,

        - Start from the road or a good tie point (marked and ribboned), traverse at an angle to the boundary and then traverse back to the road on a different pathway,

        - The width of the transect line should provide good access for clean readily accessible measurement (usually 2 to 5 metres). Measure all the pieces within the transect area.

2. Accumulated Stratum

    a. Wrap Around:

        - Measure all waste pieces that can be reached on the outside of the entire pile or

b. Sectional Wrap:

- For very large piles, divide the pile into equal halves, mark the dividing points for the halves. Perform a wrap around one-half and if the half is unreasonably large, cut in half again and perform the wrap around on an equal quarter, or

c. Swath Method:

- This is the same as the dispersed transect method. The swath must be wide enough to give a reasonable sample (10 m) or use multiple smaller (5 m) swaths. This is usually appropriate for windrows, or

d. Plot on Top of Pile:

- Where there is no safety concern, use the procedures described in section 5.1.7.

Respecting each of above, apply a measure factor (MF) to the portion of the pieces or sampled areas that were measured. Strive to measure as many pieces as possible; the estimates will be more accurate with a higher MF.

3.4 The OE Method and Standing Timber

(1) Where a waste assessment is conducted on standing timber using the OE method, the average net piece volume for each 5 cm DBH class for each species contained in the Extended Type Stand and Stock Tables or the net Merch Volume per tree in the Timber Type Summary, in the cruise compilation may be used to derive the standing timber volume.

(2) Subject to subsection (3) of this section, the species and grades for the standing timber on a cutting authority area must be derived from the HBS billing history records held by the Revenue Branch of the Ministry of Forests and Range for the timber that has been harvested on the cutting authority area during the 12-month period prior to the date that primary logging was completed on the cutting authority area.

(3) The species and grades for the standing timber may be established by an RPF or RFT by conducting a visual on site examination of the standing timber if:

(a) there are no billing history records, or,

(b) the RPF, RFT or the Ministry employee who is responsible for reviewing waste assessments determines that the billing history records do not reasonably represent the species and grade profile of the standing timber on the cutting authority area.

Waste Volumes

Forest District:		Licensee:	
Timbermark:		RU:	Return Number:
Licence:	CP:	Block:	
Block Net Area: ❶ + ❷ + ❸ ha			
Date Primary Logging Completed:	Avoidable Waste Benchmark: m^3/ha	Block Leading Species:	

Ocular Estimates

	DISPERSED		ACCUMULATED		STANDING TREES	TOTAL
Stratum Code *						
Area (ha)	❶		❷		❸	
Avoidable	m^3 /ha	Total (m^3)	m^3 /ha	Total (m^3)	Total (m^3)	Total (m^3)
Sawlog waste (1)						
Sawlog waste (2)						
Grade 4 (Y)						
Total Avoidable						
Unavoidable						
Sawlog waste						
Grade 4 (Y)						
Total Unavoidable						
Grand Total						

** Refer to Section 5.7.2 of the Provincial Logging Residue and Waste Measurement Procedures Manual.*

I hereby provide the above estimates in lieu of a waste survey. I agree to the use of these figures for cut control and waste monetary billing purposes.

Additional Comments:

Surveyor/Scaler Name and No:	RPF/RFT Name and No:
Signature (Licensee or Representative):	Forest Officer
Date:	

2010/03 Please be advised that this information may be released under the *Freedom of Information and Protection of Privacy Act.*

Figure 3.1 RW01 Estimate Form - Interior.

Waste Volumes

Forest District:		Licensee:	
Timbermark:		RU:	Return Number:
Licence:	CP:	Block:	
Block Net Area: ❶ + ❷ + ❸	ha	Stand (check box)	☐ Immature ☐ Mature
Date Primary Logging Completed:	Avoidable Waste Benchmark: m^3/ha	Block Leading Species:	

Ocular Estimates

	DISPERSED		ACCUMULATED		STANDING TREES	TOTAL
Stratum Code *						
Area (ha)	❶		❷		❸	
Avoidable	m^3/ha or #	Total (m^3)	m^3/ha or #	Total (m^3)	Total (m^3)	Total (m^3)
Conifer U grade or better						
HemBal U grade						
Conifer X grade						
Conifer Y grade						
Decid sawlog						
Decid Y grade						
Unavoidable						
Piles						
Decked wood						

** Refer to Section 5.7.2 of the Provincial Logging Residue and Waste Measurement Procedures Manual.*
*Conifer U grade or better excludes HemBal U grade. Piles = Avg. Vol/Pile * number of Piles.*
Enter number of decks and volume of decked wood under Accumulated.

I hereby provide the above estimates in lieu of a waste survey. I agree to the use of these figures for cut control and waste monetary billing purposes.

Additional Comments:	
Surveyor/Scaler Name and No:	RPF/RFT Name and No:
Signature (Licensee or Representative):	Forest Officer
Date:	

2010/03 COAST Please be advised that this information may be released under the *Freedom of Information and Protection of Privacy Act.*

Figure 3.2 RW01 Estimate Form - Coast.

6.3 Maximum Allowable Errors

Measurement of a random selection of sample plots within a cut block is used to assess the acceptability of the survey results. The items to be checked and their acceptable limits of errors are specified below.

6.3.1 Net Volume or Value

Exceeding the parameter for either the net volume or net value of  waste (avoidable and unavoidable) may be grounds for rejection of the survey.

Net Volume	
(Coast and Interior)	The net volume of  waste for all checked plots must not vary by 10 percent from the net volume of  waste determined by the check surveyor.
Net Value	
(Coast and Interior)	The net value of  waste for all checked plots must not vary by 10 percent from the net value of the  waste determined by the check surveyor. The net value is derived by multiplying the volume of each species/grade combination by the applicable twelve-month average stumpage rate of the timbermark pertaining to the species,  grade and waste class.

6.3.2 Individual Parameters

Although the net volume and value are the main determining factor for accepting or rejecting a survey, a survey may be rejected if any of the individual parameters have been exceeded.

Sample Error	S.E.% must fall within the indicated S.E. percent for the dispersed and accumulation areas on Tables 4-4 and 4-5 (Interior) or Tables 4-2 or 4-3 (Coast).
Horizontal Distance	Strip to strip and plot to plot must be plus or minus 3 percent.
Area (stratum)	Plus or minus 2 percent.
Area (tree patches)	Plus or minus two (2) percent.
Bearing	Plus or minus 2 degrees (strip to strip or plot to plot).
Measure Percent	Plus or minus 10 percent.
Estimated Plots and Volumes	Plus or minus 20 percent.

Failure to follow the procedures specified throughout this manual may result in rejection of the survey. Some examples are:

- not locating plots in accordance with the assigned SPIF,
- incorrect location of plots (not using the correct POC and Grid Spacing Distance),
- locating plots in the wrong stratum,
- establishing more plots or less plots than required from the pre-determined sampling intensity,
- establishing a plot which samples outside the stratum it is located in,
- check surveyor is unable to audit the layout of the plots,
- check surveyor is unable to audit the plots and pieces due to poor marking, and
- using an incorrect method of selecting the piles to be sampled.

Subpopulations	Subdivisions of the reporting unit or cut block (population). For example, the dispersed and accumulation volumes are each typically treated as subpopulations.
Timber	Trees, whether standing, fallen, living, dead, limbed, bucked or peeled.
Timber Merchantability Specification (TMS)	Means the merchantability specifications for stump height and diameter, log top diameter, slab thickness and log length described in this manual for the Coast and the Interior.
Timber Supply Area	Large contiguous areas of Crown land on which an annual allowable cut is calculated.
Trimming "Waste"	Avoidable waste that results from topping, slashing, bucking and end-trimming in a manner that does not conform to the merchantability specifications.
Unavoidable Waste	That component of the waste that is physically obstructed or cannot be removed for safety or environmental reasons.
Variance	The mean of squared deviations of observations about a sample mean (these deviations or differences from the mean are called residuals).
Waste	Timber except timber reserved from cutting, whether standing or felled, which meets or exceeds the timber merchantability specifications described in this manual, that was not removed from the cutting authority area.

Appendix 2 Standing Stem Harvesting

A2.1 Standing Stem Harvesting

Standing stem harvesting is a new logging method which utilizes a helicopter to selectively log components of a forest stand. Trees selected for harvesting are based on the licensees' pre-determined requirements (e.g., species, diameter, value). A 100% cruise is required for all trees that will be harvested in standing stem harvesting.

Once a tree has been selected, the tree is topped off at the height dependent on the tree diameter and the lifting capacity of the type of helicopter used in the operation. At the stump level, the tree is not cut through and enough holding wood is retained to enable the tree to remain standing.

After the tree has been topped and jigged, the helicopter moves into position, and utilizing a grapple attached to the end of a long cable line, lifts the log straight into the air and gently lowers it to the ground nearby.

A2.2 Waste Accounting Methodology

The harvested trees are scattered over a wide area throughout the cutblock and are often inaccessible, it is not cost effective to utilize a plot system for surveying the site.

Since 100% of the trees are cruised, the difference between the scaled volume and the cruised volume is used to derive the waste volumes for standing stem harvesting. Applicable for this harvesting method only, if the scaled volume exceeds the cruised volume, there is no waste to be reported for the block.

To submit a waste assessment for standing stem harvesting blocks, create a separate Reporting Unit, enter the volume of waste as an Ocular Estimate using the grade breakdown from the cruise and include a copy of the cruise summary as an attachment.

Appendix 3 Waste Rate Determination

The determination of the waste rate is dependent on whether there has been timber harvesting on a cutblock.

A3.1 Cutblocks with Harvesting

For cutblocks with harvesting, the waste rate for the cutblock is derived from the weighted average stumpage rate charged for the sawlogs (graded sawlogs on the Coast, grade code blank sawlogs and/or grade code 1 and 2 sawlogs in the Interior) in invoices issued during the 12-month period ending one month after the month in which primary logging on the cutblock area was completed. The formula to be used is:

$$WR = TS/TV$$

Where:

WR	=	Waste Rate for the cutting authority.	
TS*	=	Total billed sawlog stumpage (sum of Upset Stumpage*, and Bonus Bid) for the twelve-months prior to one month after the month primary logging was declared completed on the cutblock.	
		*	Include silviculture and development levies.
TV*	=	Total billed volume (accumulated volume in cubic metres that derived the total billed stumpage for the sawlogs) for the twelve-months prior to one month after the month primary logging was declared completed on the cutblock.	

*Effective April 12, 2007, TS and TV will exclude (on the Coast only), all coniferous species X grade, and Hemlock and Balsam, U grade.

A3.2 Cutblocks with No Harvesting

If there has been no harvesting on the cutblock, but there has been harvesting from the cutting authority, then the waste rate for the cutblock is derived using the average of the cutting authoity's four quarterly timber appraisal stumpage rates (plus any bonus and levies where applicable) in effect during the twelve-months preceding the date of the cutting authority's expiry, surrender, termination or cancellation, as the case may be. The formula to be used is:

$$WR = ACASR$$

Where:

WR	=	Waste Rate for the cutblock.
ACASR	=	Average Cutting Authority Stumpage Rate over the four quarters preceding the expiry, surrender, termination or cancellation date.

Example 1

If Cutting Authority A (CP A) became effective on September 5, 2003, and expires on September 4, 2005, then the ACASR is the simple average of the four quarterly stumpage rates for CP A as at October 1, 2004, January 1, 2005, April 1, 2005 and July 1, 2005.

Example 2

If Cutting Authority B (CP B) became effective on April 20, 2005, and is surrendered on September 5, 2005, then the ACASR is the simple average of the April 20, 2005 and July 1, 2005 stumpage rates for CP B.

A3.3 Deciduous Waste Rate

For deciduous species, the waste rate is either the appraised stand as a whole reserve rate, or if there is no appraised rate, use the specified fixed rate for the species in the Coast or Interior Appraisal Manuals, plus any bonus bid and levies where applicable.

A3.4 Occupant Licence to Cut

For OLTCs that require the licensee to deck the timber but do not allow the licensee to remove the timber, the waste rate is based on the Average Sawlog Stumpage Rates by District and Species as per Section 7.1 of the *Coast Appraisal Manual* or Table 6-1, Average Sawlog Stumpage Rate by Forest Zone and Species in the *Interior Appraisal Manual*.

Appendix 4 Riparian Management Zone (RMZ)

A4.1 Assessment Method

For waste assessments to be conducted within the riparian management zone, the assessment method should commensurate with the silvicultural system used, as follows:

•	single tree selection	-	100 percent piece scale, or 50 m^2
•	group selection	-	100 percent piece scale or (circular or rectangular) plot of 50 to 400 m^2 that best fits the group selection harvested area.

Refer to Section 4.7 for assessing partial cutting (variable retention) cutblocks, and Section 5.7.2 for stratum codes.

A4.2 Stream Clean-out

For stream clean-out conducted in accordance with the Riparian Management Area Guidebook, the waste classification procedures are as follows:

1. Where a log is left across a creek, classify the log as unavoidable for environmental reasons.

2. If a creek was machine cleaned and it was reasonable to recover the log pieces, classify the pieces as avoidable.

3. If a creek was hand cleaned and the log was bucked into small segments and thrown out of the creek channel, classify the pieces as unavoidable.

Appendix 5 Waste Benchmarks

1. Benchmarks

   Waste benchmarks will be in effect until September 30, 2012, unless terminated earlier.

   On an individual cutblock basis, the following waste benchmarks in cubic meters per hectare will be used for monetary billing of avoidable waste:

Coast	**Immature**	**Mature**
Normal	10 m^3/ha	35 m^3/ha

Interior	**Dry Belt**	**Transition Zone**	**Wet Belt**
Normal	4 m^3/ha	10 m^3/ha	20 m^3/ha

   The waste benchmark volume of a cutblock is derived by multiplying the value of the benchmark with the total of the dispersed, accumlation and standing trees sub population areas reported in a waste assessment of the cutblock.

2. Benchmark Calculations and Billings

   Avoidable waste volumes in sawlog grades X or better (Coast), 1 and 2 (Interior) from the dispersed, accumulated and the standing tree subpopulations of the cutblock will be applied to the benchmarks.

   Where the avoidable waste volumes in sawlog grades are below the established benchmark for the cutblock, no monetary billing of avoidable waste in sawlog grades will be made.

   Where the avoidable waste volumes in sawlog grades are above the established benchmark for the cutblock, monetary billings will be made on the sawlog grade volumes exceeding the benchmark.

   Avoidable waste volumes in grade Y or 4 will not be applied to the benchmark but will be billed monetarily in all cases.

3. Benchmark Eligibility

The benchmarks are administered on an individual cut block basis, regardless of whether the cutblock is in the Cutblock, the Aggregate or the Ocular Reporting Unit. Therefore, each cut block must be individually assessed to determine whether the avoidable waste within the cutblock is above or below the benchmark.

No waste benchmarks will be applied to log decks that in the determination of a forest officer are subject to scaling at a scale site or being field scaled. Such log decks must be clearly marked by the licensee and not to be included in the waste assessment.

Waste benchmarks do not apply to the unharvested cutblocks.

No waste benchmark will be applied to an area of a cutblock where the wasted timber volume compromised the site-specific forest management objective(s). The area must be delineated, waste assessed and billed separately from the remaining area of the cutblock.

BRITISH COLUMBIA

COAST

Worksheet for Waste Billing Against Benchmarks

Ministry of Forests

To be Completed by by Licensees

Licence No.		CP No.	Cut Block
Timber Mark		Reporting Unit No.	
Primary Logging Completion Date		Cut Block Net Area	ha
Location		Stand/Site Type	

Calculations

Avoidable waste sawlog (X or better) = _____ M^3/ha..... (A)

Established benchmark = _____ M^3/ha..... (B)

(A) - (B) = _____ M^3/ha..... (C)

If (C) < or = 0.0000, stop

If (C) > 0.0000, proceed as follows:

Waste Monetary Reduction Factor (WMRF) = (C)/(A) = _____ .....(D)
(to four decimals)

To be Completed by Forest Service

Processing

If (C) is < or = 0.0000, on FS 702, code:

Avoidable all species sawlogs (X or better): $0.00/$m^3$

Avoidable all species grade Y: $0.25/$m^3$

Unavoidable all species all grades: $0.00/$m^3$

If (C) is > 0.0000, request average sawlog rate from HBS

Average coniferous sawlog rate (HBS) = $ _____ /m^3 .....(E)

Deciduous sawlog rate = $ _____ /m^3 .....(F)

On FS 702, code

Avoidable hembal (J or better) and all other conifer (U or better) (D x E) = $ _____ /m^3

Avoidable hembal U and grade X all species = D x $0.25/$m^3$ $ _____ /m^3

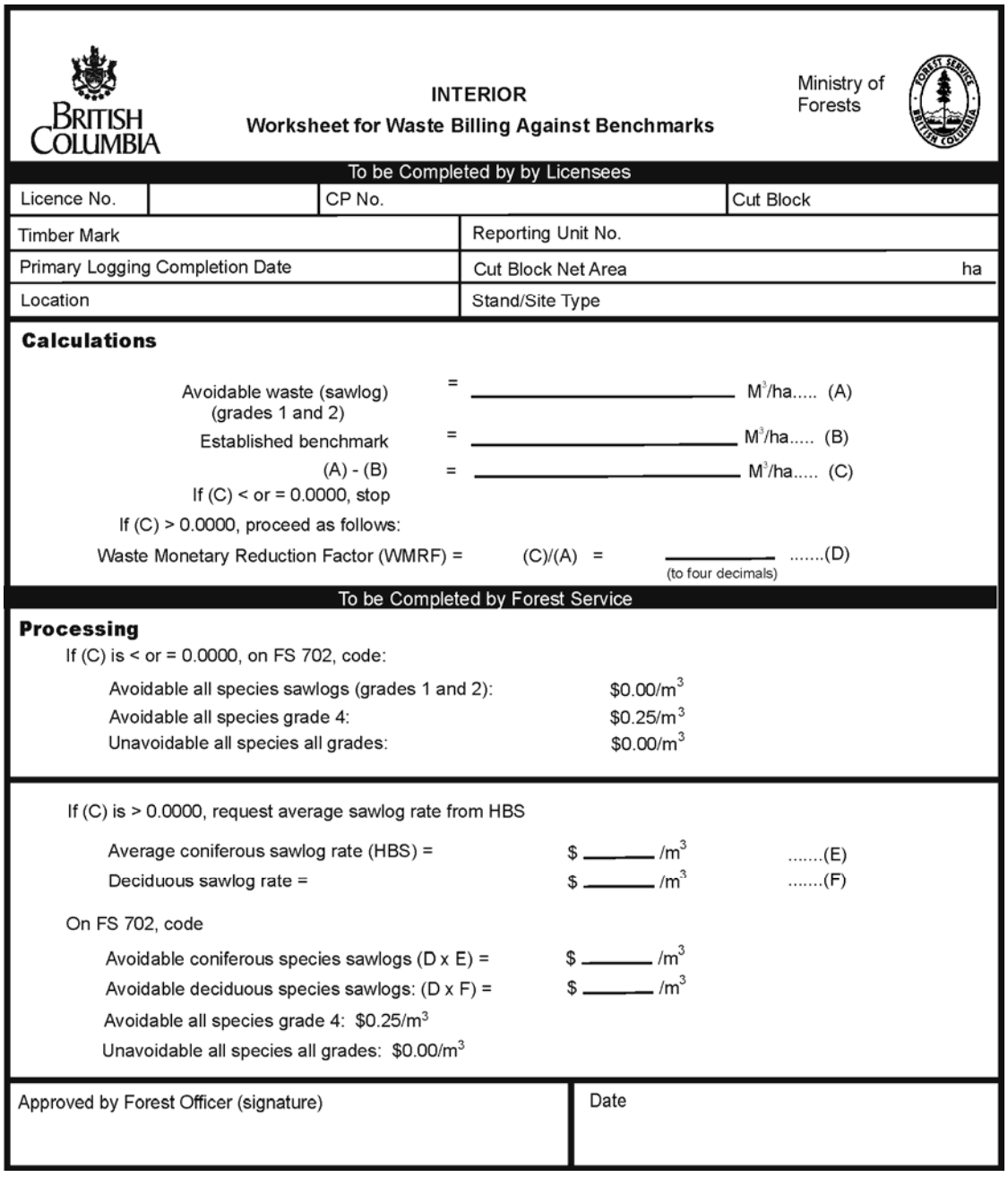
Avoidable deciduous species sawlogs: (D x F) = $ _____ /m^3

Avoidable all species grade Y: $0.25/$m^3$

Unavoidable all species all grades: $0.00/$m^3$

Approved by Forest Officer (signature)	Date

Figure A5.1 Sample of Worksheet for Waste Billing Against Benchmarks (Coast).



BRITISH COLUMBIA

INTERIOR

Worksheet for Waste Billing Against Benchmarks

Ministry of Forests

To be Completed by by Licensees

Licence No.		CP No.	Cut Block
Timber Mark		Reporting Unit No.	
Primary Logging Completion Date		Cut Block Net Area	ha
Location		Stand/Site Type	

Calculations

Avoidable waste (sawlog) (grades 1 and 2) = _____ M^3/ha..... (A)

Established benchmark = _____ M^3/ha..... (B)

(A) - (B) = _____ M^3/ha..... (C)

If (C) < or = 0.0000, stop

If (C) > 0.0000, proceed as follows:

Waste Monetary Reduction Factor (WMRF) = (C)/(A) = _____ (to four decimals) .....(D)

To be Completed by Forest Service

Processing

If (C) is < or = 0.0000, on FS 702, code:

Avoidable all species sawlogs (grades 1 and 2): $0.00/$m^3$

Avoidable all species grade 4: $0.25/$m^3$

Unavoidable all species all grades: $0.00/$m^3$

If (C) is > 0.0000, request average sawlog rate from HBS

Average coniferous sawlog rate (HBS) = $ _____ /m^3 .....(E)

Deciduous sawlog rate = $ _____ /m^3 .....(F)

On FS 702, code

Avoidable coniferous species sawlogs (D x E) = $ _____ /m^3

Avoidable deciduous species sawlogs: (D x F) = $ _____ /m^3

Avoidable all species grade 4: $0.25/$m^3$

Unavoidable all species all grades: $0.00/$m^3$

Approved by Forest Officer (signature)	Date

Figure A5.2 Sample of Worksheet for Waste Billing Against Benchmarks for Blocks.

Appendix 6 Coast Grading

Due to the timber pricing changes made to Hembal U grade and all coniferous X grade, the followings grade rules apply to blocks surveyed after May 1, 2006.

A6.1.1 Bucking Waste and Long Butts

- Old Growth - No change other than default to J grade.
- Second growth:
- Bucking Waste with less than an 8 rad top default to U grade,
- Bucking Waste with an 8 rad or larger top default to J grade.
- A piece of bucking waste that is less than 50% of it's original log diameter (at the butt) with a broken end and gross length of less than 0.4 metres is not required to be measured. All three criteria must be met or the piece must be recorded. The piece cannot be folded (accounting for volume) to become less than 0.4 metres.

  All Bucking Waste that is 50% or more of the original log diameter and meets the TMS must be measured and recorded.

A6.1.2 Stumps

- Old/Second Growth:
- < or = to 12R default to U grade,
- > or = to 13R default to J grade.
- Unavoidable grades are the same as avoidable grades.
- Severe Ring shake = X grade. (Severe ring shake is defined as covering at least 50% of the volume of the stump).
- Stumps cannot be graded as U, X or Y grade due to rot or missing wood.

A6.1.3 Logs

Use the following rules:

- Logs less than 5 meters in length and bucked on the butt end will be graded as if they were 5 metres long.

- Logs (except spruce and cypress) with an undercut butt and less than 5.0 metres to the point where 8 rads disappears cannot be better then U grade. Spruce and Cypress logs with an undercut butt and less than 4.0 metres to the point where 8 rads disappears cannot be better than U grade.

- Logs broken at both ends or broken at the butt end will be graded according to the scaling grade rules.

- Logs greater than 12.8 metres in length, the diameter used for determining the grade of the entire log is the diameter (inside bark) measured at the point 12.8 meters from the large end. Do not pencil buck, scale and grade as one piece.

A6.1.4 Standing Trees

Use the following rules:

- Old Growth/Second Growth.

- Trees that are greater than 12.8 metres to the timber merchantability specifications top diameter will be pencil bucked in 12.8 metre segments with each segment classified and graded accordingly.

For example, a 15.0 metre tree would be entered as a 12.8 metre log and a 2.2 metre piece of bucking waste with each piece graded according to its dimensions. However, if the grade of all pieces in the pencil bucked tree is the same, then record the tree as one piece.

A6.1.5 Breakage

- Where there is evidence of intentional or excessive breakage, classify as avoidable, and grade the piece as if it were a 5 metre long log.

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