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February 29, 2008

BY EMAIL

To: Regional Executive Directors

From: Murray Stech
Director
Revenue Branch

Re: Amendment No. 9 to the *Provincial Logging Residue and Waste Measurement Procedures Manual*

I hereby approve Amendment No. 9 to the *Provincial Logging and Waste Measurement Procedures Manual*, and attach a copy for your use.

The purpose of this amendment is to incorporate manual procedure changes.

This amendment comes into force on March 1, 2008.



Murray Stech
Director
Revenue Branch

Attachment





Ministry of
Forests and Range



MANUAL REVISION TRANSMITTAL

| | | |
|--|---|-------------------|
| <p>FOR FURTHER INFORMATION OR IF YOU HAVE A CHANGE OF ADDRESS, PLEASE CONTACT:</p> <p>John Wai Residue Forester and Log Salvage Policy Forester Revenue Branch Ministry of Forests and Range 6th Floor - 727 Fisgard Street Victoria, BC V8W 1R8 Phone: 356-7671 PROFS userid: John.Wai@gov.bc.ca FAX: 387-5670</p> | MANUAL TITLE | |
| | Prov. Logging Residue & Waste Measurement Procedures Manual | |
| | AMENDMENT | ISSUE DATE |
| | Amendment No. 9 | March 1, 2008 |
| MANUAL CO-ORDINATOR | | |
| Judy Laton Manuals Co-ordinator | | |
| AUTHORIZATION (Name, Title) | | |
| Murray Stech Director, Revenue 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 |
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| REMOVE | Table of Contents | iii - vi | After Table of Contents Tab |
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5.1.5 Grading Pieces

Log pieces must be graded according to the rules in the *Scaling Manual* except where the waste rules are different and then waste rules are used.

For example the minimum log length for waste is 3 m instead of the 2.5 m in the *Scaling Manual*.

For more information on the grading rules see the *Scaling Manual*.

On the coast, due to the timber pricing changes made to **Hemlock, Balsam** U and X grades for all coniferous species, refer to Appendix 6 on how to grade bucking waste, stumps, logs and standing trees.

When the waste assessment of a cutblock has not been conducted within the allowable time frame, log pieces must be graded according to their conditions (i.e., grade and decay) at the time the waste survey should have been conducted.

5.1.6 Visual Estimates

If loose debris cannot be quickly moved away to facilitate measurements in dispersed plots, or if logs and/or branches in landings prevent measuring one of the ends or the length of a log, visually estimate the missing dimension. In order to correctly establish the grade, at least one end must be visible or the piece should not be recorded.

5.1.7 Measure Factor

In deep accumulations, it may not be possible to measure or visually estimate each piece. In these cases, first measure and/or visually estimate the material that is accessible.

Then, project the plot boundaries down to the ground and visually estimate what portion of the volumes within the plot boundaries were measured. Record this portion on the plot tally card under "measure %."

This percent is known as the "Measure Factor", and is only applied to the plot method.

Measure as many pieces as possible, even when some dimensions of an individual piece must be estimated.

In the example below: If you were able to measure down approximately 2 m, you would record a measure factor of 40 percent providing that the volumes of waste were spread evenly through the cylinder within the plot boundaries. The measure factor is derived from $2\text{m}/5\text{m} \times 100\% = 40\%$.

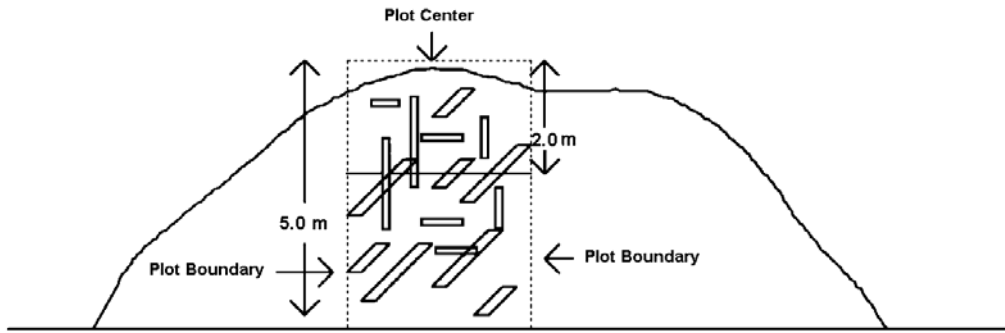


Figure 5.1 Measure Factor.

5.1.8 Deductions for Rot

For material containing rot, measure and record the gross dimensions of the piece (actual size) including rot. In addition, surveyor calculates the volume deduction for rot but records the deduction equivalent in rads and/or metres, along with the most appropriate "decay type".

5.3 Kind of Material

5.3.1 Logs

A log is defined as any near-round piece with more than half of its *original circumference* remaining and with an average diameter equal to or larger than the timber merchantability specification diameter for at least 3 m of length.

Logs are measured in accordance with the *Scaling Manual* and *Scaling Regulation*, with some exceptions, as specified in this manual.

Measure the diameter to the nearest radius class unit on the scale stick (1 rad = 2 cm) and measure the length to the nearest 0.1 m (i.e., nearest decimetre).

"Log length" is the length that a scaler records to accurately determine the gross volume of the piece; i.e., without making any deductions for rot.

A broken top piece is measured from the top contractual diameter, and then a length deduction (from the diameter to the XY line) is applied to account for the missing wood, as illustrated in Section 5.5.1.1 (Figure 5.10).

In a waste survey, the term "logs" encompasses all down logs, slabs, that are a minimum of 3 m in length with a top diameter of 10 cm or 15 cm. Record as "L" under "Kind of Material" on the plot survey card (FS 161).

5.3.2 Trees

Trees left standing after timber harvesting that are not reserved for silviculture, biodiversity or a forest management reason are measured in a waste assessment and classified as avoidable or unavoidable waste.

Appropriate documents **such as tenure licence documents, timber appraisal applications and maps need to be referenced** to determine the conifer and/or deciduous leaf trees identified by species to be retained as reserved timber for the cutblock **being** waste assessed. These specifications apply to trees outside of the mapped wildlife tree patches.

5.3.2.1 Clearcut

Individual standing tree volumes that are measured must be kept separate from the plot waste volumes. Standing tree dimensions are recorded using FS 161, Waste Survey Plot Tally. Trees that were left scattered sparingly throughout the cutblock are measured individually and each tree is numbered and marked with paint. Record the timber merchantability specification top diameter in rads as the top diameter. The length is determined using a tape/chain and a clinometer or an electronic measuring device such as a laser instrument. The waste surveyor visually estimates the location of the top diameter and then measures the length from this point down to the timber merchantability stump height (must make a 3 m log that meets the timber merchantability specifications). If the top is broken, the waste surveyor visually estimates the diameter at the break, and measures the length from the break mid-point to the stump height. The butt diameter is obtained by measuring the tree diameter at the timber merchantability specification stump height, accounting for flare.

On the FS 161, under Kind, record T for standing trees or D for downed trees, classify the trees as avoidable or unavoidable. Enter the dimensions for length, top and butt diameters, end codes, and assign a log grade.

One possible method for determining the volume of standing trees is to record the species and diameter of each tree and use the Extended Type Stand and Stock Table from the timber cruise compilation.

For trees that were left in a large patch where individual tree measurement is impractical, the waste surveyor will perform a closed traverse measuring the precise area represented by the tree patch. The cruise net volume per hectare (for that timber type(s)) will be used to determine the volume of timber in the tree patch that was not harvested. A patch is defined to be a grouping of trees occupying an area of more than one hectare. For a patch that is less than one hectare, a surveyor may apply the cruise net average or opt for individual tree measurement.

For scattered standing trees, the standing tree areas must be properly stratified. Plots will be allowed but the block must be surveyed using the Cutblock option.

Except for individual standing or downed trees where each tree is individually graded, the grade allocations for large tree patches left in clearcuts, are based on the historic billing grade profile of the timber mark for the cutting authority. Only in the absence of the

billing history records or if an RPF or RFT considers the historical records are unrepresentative of the grade profile on site, grades may be derived by an RPF or RFT based on examinations of the actual grade compositions of the stand left on site.

5.3.2.2 Partial Cut

Surveyors should reference appropriate documents that provide the volume percent reduction by either one or more of species, timber type, risk group/tree class or treatment unit for each individual cutblock within the cutting permit or agreement.


Timber volume that is left in excess of the leave volume will be billed as waste subject to the application of the waste benchmarks.

There are at least two methods - recruise, fixed area waste plots, for determining the unharvested standing tree volume in a partial cut. Choose a method that is appropriate for the cutblock.

For a recruise, a licensee must strive to put in a sufficient number of cruise plots that will either meet or exceed the sampling error achieved in the original cruise.

If waste plots are used, the plot size should be 400 m². A licensee must strive to put in a sufficient number of waste plots that will meet or exceed the sampling error objective approved for the reporting unit. The minimum sampling intensity required is at least two plots per stratum or if the cutblock is not stratified, two plots per cutblock.

Once the unharvested standing tree volume has been derived, the timber scale grades will be assigned using the historic billing grade profile of the timber mark for the cutting authority. Only in the absence of the billing history records or if an RPF or RFT considers the records are unrepresentative, grades may be derived by an RPF or RFT on the basis of actual grade compositions of the stand left on site.

The survey results for cutblocks that have been harvested using partial cut systems must be sponsored by an RPF or RFT. This is to confirm that the partial cut timber harvesting requirements that were previously stated in Schedule B, or the Percent Reduction Report in the Appraisal Cruise Compilation Submission have been met and there are no waste billing concerns on the remaining standing tree volumes. If a field or office review by ministry staff identifies an apparent discrepancy with the species or volume harvested, the licensee or the TSM may be directed by the District Manager to recruise or resurvey the residual standing trees. 

5.3.2.3 Unharvested Cutblocks

The District Manager may bill an unharvested cutblock in an expired, surrendered or cancelled cutting permit or authority. The billings will be made on the basis of the net cruise volume attributed to the unharvested cutblock.

Once the net cruise volume is determined, the grade allocations will be based on the historic billing grade profile of the timber mark for the cutting authority. Only in the

absence of the billing history records or if an RPF or RFT considers the records are unrepresentative, grades may be derived by an RPF or RFT based on examinations of the actual grade compositions of the stand left on site.

5.3.3 Slabs

A slab is defined as any non-round piece with less than half (1/2) of its original circumference remaining, a minimum thickness of 10 cm and an average diameter equal to or larger than the timber merchantability specification diameter. The *only* exception is mature red cedar (on the Coast only) which must have a minimum thickness of 15 cm to be measured or recorded.

Slabs are measured, graded and recorded as a “Log” (L) if they have a minimum thickness of at least 10 cm for at least 3 m in length or as “Bucking Waste” (W) if they are bucked at the butt end or both ends and have a minimum thickness of a least 10 cm for less than 3 m but at least a tenth (0.1) of a metre.

Chapter 5 of the *Scaling Manual* should be referred to for measurement procedures for slab ends in various shapes (i.e., semi-circle, quadrant, sector, segment, etc). Alternatively, the following method is continuously accepted for computing slab diameters, for waste purposes.

Using Figure 5.3, slab diameters are computed using the following steps:

1. Measure and average 3 thickness.

i.e., $11 + 9 + 13 = 33/3 = 11$ rads

1. 2. Measure 1 width between 5 rad edges.

i.e., Width = 31 rads

1. 3. Average the thickness and the width.

i.e., $11 + 31 = 42/2 = 21$ rads*

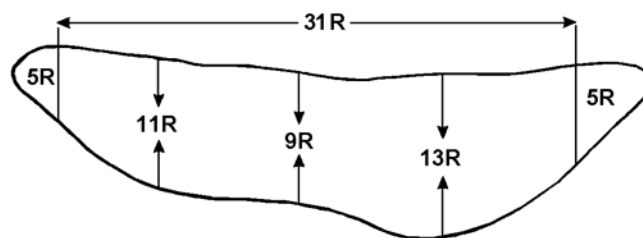


Figure 5.3 Measuring Slabs.

5.3.4 Stumps

A stump is defined as any piece with more than half (1/2) of its original circumference remaining, less than 3.3 m in length and still attached to the roots. The length is to be measured from the high side of the stump. A stump that is at least 3 m in length after the maximum allowable stump height (usually 30 cm) has been deducted is classified as a log because of its length.

Stump heights are always measured from the high side.

Stump height *is not* measured from the top of any root flare or any obstacles such as accumulated bark, moss, or other loose duff and vegetation that could be kicked away easily by the faller. No consideration should be given to brush and undergrowth that the faller should cut away before falling.

Measure from where the ground meets the base of the stem to the top of the felling cut (as shown in Figure 5.4) to the nearest tenth (0.1) of a metre. The volume of the undercut is included in the measured stump volume. Deduct the stump height of 0.3 m and record the result under length on the FS 161.

If the total stump height is less than or equal to the stump height of 0.3 m measured from the high side, then the stump *does not have to be recorded*.

For raised stumps where the tree has grown out of a rotten log, the stump height should be measured from the point of germination, or the high side, whichever is higher.

Stumps will not normally be graded and will default to sawlog grade. However, if the log from the stump is present the stump should be graded the same as the log.

If the stump has less than 50 percent firmwood volume, the stump is not recorded.

In the Interior, dead stumps will only be measured and recorded where the timber stand is designated to be catastrophic.

On the Coast, dead stumps will not be measured nor recorded except cedar, cypress and white pine. Use the following guidelines to differentiate between dead/live stumps:

| | |
|------|--|
| Dead | considerable crumbling sap rot and/or loose or missing bark. |
| Live | little or no crumbling sap rot and bark not loose. |

Sometimes stumps can be broken up in logging. Any stump fragments are ignored. Conversely, any stumps with missing fragments are measured as if the fragment was still in place.

5.3.4.1 Measuring and Recording Stumps

Careful measurement of stumps is critical because they contain high volume per unit of length.

Measure the top diameter (inside bark) of the stump (unless the total height of the stump exceeds 1.3 m) and record it in the "top" column.

For a stump whose total height exceeds 1.3 m, record the diameter (inside bark) at 1.3 m above the ground on the high side of the stump. The taper of the stump should be finished at approximately that point and recording the top diameter above 1.3 m would end up under estimating the volume of the stump.

Stump diameter is always measured inside bark, and recorded to the nearest rad.

No entry is required in either the top or butt end code fields on the FS 161.

5.3.4.2 Waste in Stumps

Unless there are physical obstructions or safety precautions because of decayed wood, waste in stumps is classified as avoidable waste.

Unavoidable waste occurs where excessive snow depth or an obstruction prevents cutting the tree to the timber merchantability specifications. Where there are physical obstructions or excessive snow depth, the lowest height that the tree could have been cut must be established.

Frequently, trees and snags with butt rot are felled above the TMS stump height for safety reasons. Under these circumstances, a stump may have both avoidable and unavoidable components. This situation is illustrated below in Figure 5.4.

The District Manager may approve a higher allowed stump height on all or a portion of the cutblock for safety reasons or to hold back logs.

- A. Timber Merchantability Specifications (TMS) Stump Height.
- B. Allowed Stump Height.
- C. Total Stump Height.

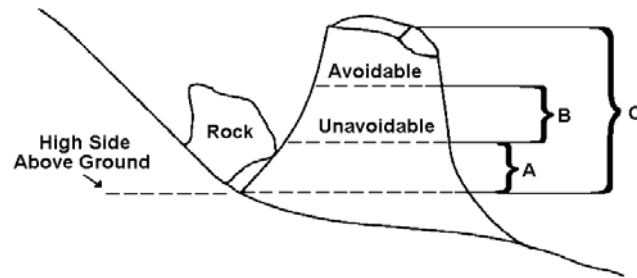


Figure 5.4 Avoidable and Unavoidable Waste (High Side).

5.3.4.2.1 Definitions:

- A. *Timber merchantability specifications (TMS) stump height* of 30 cm is measured from the ground on the *high side*. This part is not recorded. If the stump is higher, length measurements start from the 30 cm mark.
- B. *Allowed stump height* is the height specified in the District Manager's letter for heavy snow packs, or the minimum distance from the ground on the *high side* of a stump up to a point above a physical obstruction which allows for safe falling. B minus A = unavoidable piece.
- C. *Total stump height* is the distance from the ground on the *high side* to the top of the felling cut. C minus B = avoidable piece.


5.3.4.3 Recording Stumps in Segments

If there are both avoidable and unavoidable components of waste, the stump is recorded as two pieces each with its own piece number and record appropriate comment code such as MP on FS 161 to indicate multiple pieces.

Record the top portion as avoidable piece. Enter the difference between the total stump height and the allowed stump height in the length field, and the top radius in the top field. Classify this piece as avoidable (A).

Record the lower portion as unavoidable piece. Enter the difference between the allowed stump height and the TMS stump height in the length field, and the top radius of this lower segment in the top field. Classify this piece as unavoidable (U).

5.3.4.4 High Stumps - Snowpack

 Winter logging can result in unavoidable waste occurring in high stumps due to snowpack, especially alongside winter skid trails.

Where winter logging is approved and the TMS stump heights cannot be achieved by operators because of snow conditions, the waste portion is considered avoidable unless a written exemption is issued by the District Manager.

This exemption will specify a new maximum stump height to reflect acceptable winter stump heights.

The portion of the stump between the TMS stump height and the allowed stump height specified in the exemption letter is considered unavoidable.

The portion of the stump above the allowed stump height specified in the exemption letter is considered avoidable.

In all cases, trees must be cut as close to the TMS stump height as possible.

Survey crews must confirm if an exemption letter has been issued prior to the survey.

In addition, the decision to classify stumps as unavoidable because of snow should not be automatic. Prudent operators with a mix of operating areas are expected to avoid high snow areas through sound planning.

5.3.4.5 Blowdown Stumps

It is very difficult to determine whether a stump on a blowdown area is avoidable or unavoidable after the logging has been completed since there could have been a dangerous obstruction that has since been removed.

Safety is the primary consideration for the person cutting the log off a tree that has been blown over. Therefore, if there is any question as to whether the stump should be called avoidable then the waste surveyor should give the licensee the benefit of the doubt and call it unavoidable.

Unavoidable waste in blowdown stumps also occurs in the form of long butts. Where this occurs, as illustrated below in Figure 5.5, the long butt is treated as a stump with the length being measured from the side 30 cm adjacent to high ground.

If a licensee wishes to measure breakage for its own purposes, it should be tallied as *unavoidable* and will not be included in the cut-control volume.

However, where breakage is considered excessive because of an inadequate harvesting method or was intentionally caused by the logging crew it should be tallied as *avoidable* breakage and billed monetarily and against the licensee's cut-control according to its grade.

Do not scale or record breakage unless specifically requested to do so or it is excessive & avoidable.

| | |
|--|---|
| <p><i>WASTE - WASTE CLASS</i> *R* (1a)</p> | <p>Identifies the waste class (avoidable/unavoidable) of the piece. This is based solely on the physical accessibility and/or safety concerns for recovery of each piece. Waste class has nothing to do with quality.</p> <p>See "Waste Class" in Section 5.1.3 for a detailed description of how to identify the waste class of a piece.</p> |
|--|---|


5.8.3 Gross 'In Plot' Dimensions for Pieces

The piece dimensions are inclusive of decay (i.e., they are not reduced to account for the volume of decay).

They include only the portion of the piece within the plot boundaries.

Length is measured to the plot boundary and the diameter of that end is taken there.

| | |
|--|--|
| <p><i>LENGTH</i> *R* (3.1 n-rj)</p> | <p>Quantifies, in metres, the "in plot" length of the piece.</p> |
| <p><i>TOP</i> *R* (3n-rj)</p> | <p>Quantifies, in rads, the gross diameter, inside bark, of the top end.</p> |
| <p><i>E - END DESCRIPTION</i> *R* (1a)</p> | <p>Describes whether the top end is natural (N), cut (C), Broken (B) or buried (X).</p> |
| <p><i>BUTT</i> *R* (3n-rj)</p> | <p>Quantifies, in rads, the gross diameter, inside bark, of the large end.</p> |
| <p><i>E - END DESCRIPTION</i> *R* (1a)</p> | <p>Describes whether the butt end is undercut (U), cut (C), natural (N), Broken (B) or buried (X).</p> |

| | |
|---------------------------|---|
| <p>GRADE *R* (1a)</p> | <p>Identifies the grade of the piece regardless of the kind of wood or waste class.</p> <p>For a complete description of the log grades, Coast or Interior, refer to the <i>Scaling Manual</i>.</p> <p>Waste surveyors on the Coast, must correctly identify "J", "U", "X", "Y", "dry Y" and "Z" grades.</p>  <p>Waste surveyors in the <i>Interior</i> must be able to correctly identify all interior grades (1, 2, 4, dry 4, 6 and Z).</p> |
|---------------------------|---|

Dry Y (Coast) or Dry 4 (Interior), (former grade 5, not measured in waste, and is defined as follows)

Summary of the Grade Rule (for all species)

Logs and slabs graded as lumber reject and cut from trees which were *dead when harvested*.

Log requirements for the grade:

To be classified as dry the log *must* have one or more of the following characteristics (INDICATORS):

- deteriorated cambium,
- loose or shedding bark,
- sap rot,
- wood borers,
- deep checks (not weather checks).

Logs *cannot* be classified as dry if they display any of the following characteristics (Contraindicators):

- curling bark (green bark that is curling or cupping due to the drying process),
- green needles,
- fresh cambium (sticky)
- mildew or mould on wood surface (except on windthrow),

- charred wood (recent fire kill),
- dark weathered ends (indicative of decked timber), or
- pitching log ends.

Logs which display at least one *Indicator* plus one or more *Contraindicators* are deemed to have come from a live, green tree.

Where the logs display characteristics (e.g., sun checks) which were caused by delays between timber felling and survey, they do not qualify as dry 4 or Y.

5.8.4 Deduction for Rot or Holes

It is a standard scaling convention in British Columbia to account for the volume of decay by reducing the gross dimensions of a piece by a *length and/or diameter (rad) deduction* (computed using the volume data on the scale stick). This gives net dimensions that will produce a volume equal to the net volume of the piece. This process is well documented in the scaling manual.

For waste assessments the *length and/or diameter (rad) deductions* must be recorded along with the gross dimensions of the piece and the compilation program calculates the net volume of the piece.

This is different from Scaling where they only record the net dimensions of each piece.

Waste surveyors must be able to calculate these deductions accurately and then record them on the FS 161.

| | |
|---|---|
| <i>LENG.</i> - <i>LENGTH *S*</i> (2.1n-rj) | Quantifies the length deduction in tenths of metres. |
| <i>TOP *S*</i> (2n-rj) | Quantifies, in rads, the diameter deduction for the top end. |
| <i>BUTT *S*</i> (2n - rj) | Quantifies, in rads, the diameter deduction for the butt end. |
| <i>D - DEFECT TYPE *S*</i> (1a) | Identifies the type of decay in the piece. Must be recorded whenever a deduction has been recorded. See the back of the FS 444 (Figure 5.13) for codes. |

5.8.5 Outside Plot Measurements

Outside plot measurements are not required in the new Waste System.

Everything to the right of decay type on the Waste Survey Plot Tally Card is optional and does not have to be completed.

The comment codes are very useful for explaining the waste classification or grade assigned to the piece. This information is not subject to audit.

The "outside measurements" are essential if any studies of average piece size are contemplated (e.g., the outside butt diameter will help to substantiate the grade of the piece).

| | |
|---|---|
| <i>FAR END *O*</i> (2n-rj) | Quantifies the diameter, in rads, of the actual end of the piece when it is outside the plot boundary. This diameter can be estimated. |
| <i>ADD LENGTH - ADDITIONAL LENGTH *O*</i> (3.1 n-rj) | Quantifies, in metres, the additional length of the piece that is outside the plot boundary. This length can be estimated. |
| <i>COMMENT CODE *O*</i> (2a) | Additional descriptive information that may be useful. See the back of the FS 444 for codes that the computer compilation program will accept. |
| <i>BLANK COLUMN</i> (unlabelled) | For your own use. |
| <i>PIECE VOLUME</i> | This column allows for recording piece and plot volumes. |

A simple formula for computing volume with a pocket calculator is:

$$\text{VOLUME} = [(t * t) + (b * b)] * L * K$$

| | | | |
|-------|---|---|------------------------|
| Where | V | = | volume in cubic metres |
| | t | = | top diameter in rads |
| | b | = | butt diameter in rads |
| | L | = | Length in metres |
| | K | = | 0.000157 |

6.3 Maximum Allowable Errors

Measurement of a random selection of sample plots within a cut block are 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 avoidable waste may be grounds for rejection of the survey.

| | |
|----------------------|---|
| Net Volume | |
| (Coast and Interior) | The net volume of avoidable waste for all checked plots must not vary by 10 percent from the net volume of avoidable waste determined by the check surveyor. |
| Net Value | |
| (Coast and Interior) | <p>The net value of avoidable waste for all checked plots must not vary by 10 percent from the net value of the avoidable waste determined by the check surveyor.</p> <p>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 and grade.</p> |

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.

6.4 Acceptability of Block Results

If the net **value and** volume of the checked plots falls within the specified variance, then the survey is deemed to be acceptable unless the procedures specified in the manual were not adhered to (i.e., incorrect area used, log decks not included in the survey). Any obvious bias in grades and/or waste class which affect monetary billing will result in rejection of the survey.

If the net volume **or value** parameters **are** not met then the check survey will pinpoint the areas of weakness and allow that portion or entire survey to be redone.

If more than **three check surveys** or 30 percent of the checked cutblocks within a reporting unit are rejected, the district manager may order that all the cutblocks within that reporting unit be resurveyed .

Rejection of a survey will count against the waste surveyor for the purposes of validation of their certification. If more than one (1) waste surveyor worked on a cutblock, the rejection will count against the waste surveyor whose fieldwork caused the rejection.

6.5 Non-Compliance With Check Survey Standards

If the licensee's or contractor's survey work is rejected after a check survey, the District Manager may order the licensee or contractor to re-survey **the entire cutblock or those portions of the original survey that caused the rejection. The re-survey must be completed within 60 days of the District Manager's notification.**

The licensee or contractor will be responsible for any costs they incur in the re-survey.

A full or partial re-survey is subject to check surveys carried out at the District Manager's discretion.

6.5.1 Second Check Survey

A licensee or contractor who has been ordered to perform a re-survey may request a second check survey in writing to the District Manager.

The District Manager may have a second check survey performed by ministry personnel that were not involved in the first check survey.

If the second check survey:

- a. Finds the original survey in non-compliance with check survey standards,**
 - i. the licensee or contractor will perform a re-survey to replace the original survey at his expense, and**
 - ii. the licensee or contractor who requested the second check survey must pay to the government the charges, costs and expenses incurred by the government in respect of the second check survey.**
- b. Finds the original survey in compliance with check survey standards,**
 - i. the original survey stands, and**
 - ii. no charges, costs and expenses are payable to the government.**

6.5.2 Dispute Resolution (BCTS)

Where there are billable waste volumes on a Timber Sale Licence, the Timber Sales Manager may notify the TSL holder of the waste assessment results. In the event that the TSL holder disputes the waste assessment results, the holder may submit a letter in writing specifying the grounds of dispute to the TSM within thirty (30) days of receiving the assessment results.

If the TSL holder is notified of the assessment results and no letter of dispute is received by the TSM, the TSL holder is deemed to have accepted the waste assessment results.

Once the TSM has forwarded the TSL waste assessments to the District Manager, subject to the field check that may be carried out by the district staff, the results are deemed to be final.

Any disputes relating to the check surveys and waste billing rates should be directed to the District Manager.

6.6 Material Disposed of Prior to Waste Assessments

If waste materials on a cutblock, landings, and roadside or spot accumulations are disposed of prior to the completion of waste assessments, the District Manager may bill the licensee monetarily and for cut control by using the higher of the district or the licensee waste volume average experienced for the stratum type in the past year or the best information.

Additionally, the District Manager may bill the licensee for the administration and field costs incurred in preparing the estimates.

7.2 Reporting Requirements

Licensees and contractors who utilize the web based Waste System must enter and submit the data for an entire cutblock within thirty days of completion of the field survey as specified under Section 2.4. The final survey map for each cutblock must be included in the submission or in a manner acceptable by the District Manager.

If the log-loading-out phase causes the survey and report to be delayed, the delay time and the reason for that delay should be submitted to the District Manager.

The District Manager may extend these deadlines.

For major licensees and BCTS, survey reports submitted to the District Manager after November 15th may result in having invoices issued in the year following.

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 authority'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*.

- 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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