

# Coast Appraisal Manual

## Effective March 1, 2016

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**Includes Amendments**

Amendment No. 1

Amendment No. 2

**Effective Date**

June 15, 2016

September 1, 2016



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# **1 Definitions and Interpretations**

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## 1.1 Definitions and Interpretations

In this manual:

“**Act**” means *Forest Act*;

“**Accurate**” for the purposes of Section 105.1 of the *Act* as it applies to this manual means submitted in accordance with the requirements of this manual;

“**Anniversary date**” means the annual recurrence of the month and day when the term of the cutting authority began;

“**Appraisal Data Submission (ADS)**” means the information required by the person who determines the stumpage rate to determine the stumpage rate including a forest professional’s signed submission in the form required by the director and any other information required by the regional manager or district manager;

“**Billing history record**” means a record of log scale data derived from a record kept by the Timber Pricing Branch of log scale data reported on stumpage invoices issued by the Timber Pricing Branch for timber scaled under Section 94 of the *Act*; and for greater certainty does not include billing data from cruise based cutting authorities; but for any cutting authority with an effective date prior to October 1, 2012, the billing history record to be used in a minister-directed reappraisal under Section 3.3.8 shall include billing data from cruise based cutting authorities;

“**BCTS**” means BC Timber Sales;

“**BCTS licence**” means a timber sale licence entered into under Section 20 of the *Act* or Section 21 as it was before it was repealed;

“**Bonus Bid**” means a bonus bid described in Section 103(1)(d) of the *Act*;

“**Bonus Offer**” means a bonus offer described in Section 103(2) of the *Act*;

“**Coast Area**” means West Coast and South Coast forest regions or Coast Forest Region;

“**Coast Mountain Forest District**” means that part of the Coast Mountain forest district that is within the geographic boundaries of the North Coast timber supply area;

“**Coniferous cruise volume**” means that part of the total net cruise volume which is coniferous timber;

“**Controlled Recreation Area**” means controlled recreation area as defined in the *Resort Timber Administration Act*;

“**Cruise based billing cutting authority**” means a cutting authority where under Section 106 of the *Act* the stumpage payable is calculated using information provided by a cruise of the timber conducted before the timber is cut;

"**Cutting authority**" means:

- a. a cutting permit issued under a forest licence, a timber sale licence, a timber licence, tree farm licence, a community forest agreement, a community salvage licence, a woodlot licence, a master licence to cut, a forestry licence to cut, or First Nations woodland licence;
- b. a timber sale licence that does not provide for the issuance of a cutting permit,
- c. all other licences to cut, or
- d. a road permit;

"**Cutting authority area**" means the area where timber may be harvested under authority of;

- a. a cutting permit,
- b. a timber sale licence that does not provide for the issuance of a cutting permit,
- c. a licence to cut, or
- d. a road permit;

"**Deciduous timber**" means timber that is any of the alder, birch, cottonwood and maple species;

“**Detailed engineering**” means non-tabular;

"**Director**" means director of Timber Pricing Branch of the Ministry of Forests, Lands and Natural Resource Operations;

"**District manager**" means:

- a. Except as provided in paragraph (b) of this definition, the district manager or district manager’s designate;
- b. Where the cutting authority area being appraised or reappraised is located in a controlled recreation area designated under the *Resort Timber Administration Act*, then district manager means an employee of the Ministry to whom the minister has delegated the minister’s powers and duties under Section 2 of the *Resort Timber Administration Act*;

“**Effective Date**” means, unless otherwise specified in the manual:

- a. the date the stumpage rate is determined when required for advertising for competitive award, or

- b. the effective date of the cutting authority when the stumpage rate is determined for a cutting permit or a direct award licence;

**“Executive Director, BCTS”** means Executive Director, BCTS or Executive Director, BCTS’ designate;

**“Forest Professional”** means a Registered Professional Forester (RPF) or a Registered Forest Technologist (RFT) or a special permit holder acting within the scope of their permit, registered and in good standing with the Association of British Columbia Forest Professionals;

**“Harvest Area”** means the area indicated for harvest on an appraisal map submitted by the licensee;

**“Helicopter Selection”** means the harvesting of single trees within standing residual timber that have been felled and then removed using a helicopter;

**“Hogged Tree Material”** means tree residues or by-products that have been shredded into smaller fragments by mechanical action and is made from post-harvest material where a waste assessment has been made. Where the post-harvest material is removed from an area that is or was a cruise based billing cutting authority, a waste assessment is not required;

**“Immature coniferous timber”** means coniferous timber that is younger than 121 years old;

**“Intact cutblock”** means 90% or more of a cutblock’s total net cruise volume approved under the cutting authority remains unharvested (standing, felled or decked);

**“Licensee”** means the holder of a cutting authority;

**“Low grade”** means grades ‘X’ and ‘Y’ of all species and ‘U’ grade hemlock and balsam;

**“Main Access Road”** means a long-term (i.e., in use for more than ten years) mainline road that is tributary to the appraised cutting authority area, or is used to transport bulk fuels, supplies, equipment or harvesting crews necessary to carry out day-to-day harvesting activities on that area, and has an average stabilized subgrade width greater than seven metres;

**“Manual”** means *Coast Appraisal Manual*;

**“Mature coniferous timber”** means coniferous timber that is 121 years old or older;

**“Minister”** means Minister of Forests, Lands and Natural Resource Operations;

**“Ministry”** means Ministry of Forests, Lands and Natural Resource Operations;

**“Net cruise volume”** means the gross volume of all species listed in Section 4.2.3(1), plus alder, birch, cottonwood and maple in the cutting authority area minus the volume of

decay, waste and breakage in that timber unless otherwise specified in the *Cruising Manual*;

“**Northern Great Bear Rainforest (GBR)**” means all Crown land within the area covered by the Mid Coast and North Coast Timber Supply Areas;

“**Old growth coniferous timber**” means coniferous timber that is 141 years old or greater;

“**Problem forest stands**” means a cut block approved by the district manager for inclusion in the coast problem forest stand pilot project under Section 2.2.3;

“**Regional manager**” means regional executive director of the Ministry or except for Section 2.1.1(1)(a), regional executive director’s designate;

“**Regulations**” means regulations under the *Act*;

“**Remaining volume**” means the total net cruise volume of a cutting authority area minus the total volume of timber in the billing history record of the cutting authority area on the effective date of the reappraisal of the cutting authority area;

“**Road Permit**” means road permit or the timber mark for a road permit that is associated with the applicable tenure listed in Section 115(1) of the *Act*;

“**Scale Based cutting authority**” means a cutting authority where under Part 6 of the *Act*, the stumpage payable is based on a scale of the timber harvested from the cutting authority area;

“**Second growth coniferous timber**” means coniferous timber that is less than 141 years old;

“**Selling price zone 51**” means the table of coast market pricing system log values for old growth coniferous timber, approved by the Director, Timber Pricing Branch;

“**Selling price zone 52**” means the table of coast market pricing system log values for second growth coniferous timber, approved by the Director, Timber Pricing Branch;

“**Skyline**” means any method of yarding where the logs are fully suspended above the ground by a short span, long span, or multi-span system using a carriage with standing or running lines;

“**Stumpage Appraisal Parameter**” means the BC Consumer Price Index and applicable Coast Domestic or Export-Adjusted Log Values approved by the Director;

“**Timber Pricing Branch**” means Timber Pricing Branch of the Ministry of Forests, Lands and Natural Resource Operations;

“**Timber Sales Manager**” means the timber sales manager or the timber sales manager’s designate;

"**Total net cruise volume**" of a cutting authority area (tncv) is the product of the net cruise volume per hectare of the cutting authority area (ncv/ha) multiplied by the total merchantable timbered area to be harvested under the cutting authority (tmta). Expressed

as an equation: 
$$\text{tncv} = \frac{\text{ncv}}{\text{ha}} \times \text{tmta};$$

"**Tributary cutting authority area**" means a cutting authority area from which timber must be transported over the road that is developed, or a cutting authority area to which bulk fuels, supplies, equipment and harvesting crews necessary to carry out the day-to-day harvesting activities on that area must be taken on a regular basis over the road that is developed;

"**Unit cost**" means cost estimate expressed in dollars per cubic metre;

"**Woodchips**" means timber that has been cut into small pieces by a chipper and is made from post-harvest material where a waste assessment has been made. Where the post-harvest material is removed from an area that is or was a cruise based billing cutting authority, a waste assessment is not required.

## 2.2 Numbering System

The following exemplifies the numbering system that is used in this manual.

- 1. = Chapter
- 1.1 or 1.1.1.1 = Section
- 1.1.1.1 (2) = Section with subsection
- 1.1.1 (2)(a) = Section with subsection and paragraph.
- Table 4-2 = Table 2 within Chapter 4

### 2.2.1 Calculation Conventions

1. Every calculation required to be performed will be performed to the full capacity of a calculating machine with the results truncated at four places of decimals and rounded to two places.
2. A result from 5 to 9 will be rounded upward and a result from 1 to 4 will be rounded downward.
3. Each calculation of a tenure obligation adjustment or specified operation adjustment expressed in dollars per cubic metre will be rounded to the nearest cent.
4. Where a value is specified as a limit, for example a constraint or a requirement for an equation,
  - a. the value will be treated as an absolute value, and
  - b. an actual measurement or record will not be rounded before use unless otherwise specified in this manual.

### 2.2.2 Cutblocks within a Cutting Authority Area

1. Except as provided for in subsections 1(c), 2, 5 and Section 2.2.4, all cutblocks within a cutting authority area must:
  - a. have each of their geographic centres within the same appraised point of origin area as identified in Section 4.2.5.3; and
  - b. be fully contained within the same timber supply block, or in the case of a cutting authority area under a tree farm licence, be contained within the same forest district.
  - c. For a cutting authority issued under Section 20 of the *Forest Act* within the designated Mid Coast or North Coast Timber Supply Areas:
    - i. have each of their geographic centres within the same appraised point of origin area as identified in Section 4.2.5.3; and
    - ii. be fully contained within the same timber supply area.

2. A **cutting authority** approved by the district manager under Section 2.2.3:
  - a. is not constrained by subsection 1 above;
  - b. must be located anywhere within the same timber supply area, or in the case of a tree farm licence or first nations woodland licence, be contained within the same forest district, where the licensee is entitled to harvest under the licence that the cutting authority has been issued under; and
  - c. is not eligible for an extended road amortization agreement.
3. Helicopter single standing stem selection as described in Section 4.4.4 must not be combined with any other harvest method within the same cutting authority area.
4. Except as provided in subsection (3) of this section, there are no other restrictions on what types of harvest methods may be used in or which types of timber can be contained in a cutting authority area.
5. The road right of way that provides access to and is sold as part of a BCTS licence, is exempt from the requirement to be located within the same timber supply block or tree farm licence as the BCTS licence.

### **2.2.3 Coast Problem Forest Stands Pilot**

1. A problem forest stand is a cutblock comprised completely of one or more of the following stand characteristics:
  - a. Poor timber types (old growth timber height class 3 or less), or
  - b. located at elevations greater than 700 metres, or
  - c. greater than 80% old growth hemlock/balsam.
2. A cutting authority considered for this pilot must be under a tree farm licence, a First Nations woodland licence or a replaceable forest licence and have one or more cutblocks meeting the criteria of subsection 1.
3. Licensees participating in this pilot must submit appraisal information allowing for the determination of the value differential in accordance with the requirements prescribed by the director.
4. Licensees must not exceed their value allocations for this pilot.
5. Cutting authority applications under this pilot will not be accepted after March 31, 2017.
6. The minister may terminate this pilot at any time.



## **2.2.4 Northern Great Bear Rainforest**

1. This section does not apply to:
  - a. cutting authorities entered into under Section 20 of the *Act*; and
  - b. subject to Section 7.10, to any cutting authority appraised in accordance with Chapter 7.
2. A cutblock(s) within a cutting authority area other than within a cutting authority described in subsection 1 above, for the purposes of the Northern Great Bear Rainforest:
  - a. must be located and contained within the same forest district where the licensee is entitled to harvest under the licence that the cutting authority has been issued under;
  - b. is not approved under a Section 2.2.3 cutting authority.

## 2.3 Appraisal Data Submission Requirements

### 2.3.1 Cruise Information

1. Except as provided for under subsection 7, and unless otherwise specified by the director, cruise data must be gathered and compiled in accordance with the following Ministry publications and the coast timber merchantability specifications in Table 2-1:
  - a. *Cruising Manual*, at the following website:  
<http://www2.gov.bc.ca/gov/content/industry/forestry/competitive-forest-industry/timber-pricing/timber-cruising/timber-cruising-manual>,
  - b. *Cruise Compilation Manual* at the following website:  
<http://www2.gov.bc.ca/gov/content/industry/forestry/competitive-forest-industry/timber-pricing/timber-cruising/cruise-compilation-manual>

**Table 2-1 Coast Timber Merchantability Specifications**

<b>Description</b>	<b>Mature</b>	<b>Immature</b>
The following coast timber merchantability specifications must be used in all appraisals.		
1. Maximum stump height (measured from the top of the stump down to the highest ground level adjacent to the stump)	30.0 cm	30.0 cm
2. Minimum slab thickness for cedar only	15.0 cm	10.0 cm
3. Minimum top diameter (inside of the bark)	15.0 cm	10.0 cm
4. Minimum length of a log or slab	3.0 m	3.0 m

2. When cruise information is submitted to the district manager or the regional manager in order to determine a stumpage rate or an upset stumpage rate, that information must include:
  - a. The cruise compilation reports, and
  - b. The ASCII data files (i.e. .dat and .red or .pr).
  - c. The CSV (if applicable, also the percent reduction CSV file) for appraisals submitted on or after November 1, 2013, when the cruise was compiled using the 2013.00 version of the approved cruise compilation program.
3. When requested by the district manager, a copy of the original field data and traverse notes must be provided by the licensee.
4.
  - a. The cutting authority area will be appraised using the total net cruise volume of timber authorized for harvest in that area.
  - b. The total area of merchantable timber in the cutting authority area is obtained from the appraisal summary of the cruise compilation report.

### 3.3 Reappraisals

1. Where these policies and procedures require a reappraisal to be performed, except as provided in Section 3.6, the stumpage rate must be redetermined in accordance with the relevant policies and procedures that are or were in effect as the case may be on the effective date of the reappraisal.
2. Except as provided in subsection (3) of this section or sections 3.3.1(1)(d), 3.3.2, 3.3.3, 3.3.4 or 3.3.5 or otherwise directed by the Minister under Section 3.3.8, a reappraisal is a complete reassessment of the cutting authority area at the time of the reappraisal by the person who determines the stumpage rate taking into account:
  - a. a revised appraisal data submission submitted by the licensee in accordance with this manual, and
  - b. information available to the person who determines the stumpage rate.
3. Road development costs originally estimated using ministry approved competitive bids may not be re-estimated in a reappraisal.

#### 3.3.1 Changed Circumstances

1. A changed circumstance on or in relation to a cutting authority area means a circumstance where:
  - a.
    - i. the licensee or a contractor working on the licensee's behalf has harvested or will harvest at least fifteen percent of the volume of timber on the cutting authority area using a harvest method that is different from the harvest method used in the most recent appraisal or reappraisal of the cutting authority area, and
    - ii. the different harvest method when taken into account in a changed circumstance reappraisal will produce the highest stumpage rate within the meaning of Section 4.1.
  - b. there will be a difference of at least fifteen percent between the total road development unit cost in the changed circumstance reappraisal and the total road development unit cost that was used in the most recent appraisal or reappraisal where this difference results from circumstances other than a change in the manual or a change as a result of a stumpage adjustment.

- c. the cutting authority is scale based and land containing merchantable timber has been either added to or deleted<sup>1</sup> from the cutting authority area since the most recent cruise compilation or recompilation that was used in that most recent appraisal or reappraisal that exceeds either:
  - i. fifteen hectares or
  - ii. fifteen percent of the area of the cutting authority area as it was prior to the addition or deletion of the land, or
- d. at least fifteen percent of the total net cruise volume that was used in the most recent appraisal or reappraisal of the cutting authority area has been suddenly and severely damaged, unless the timber was damaged by a fire for which the licensee was responsible and the licensee failed to comply with the *Wildfire Act* and Regulations.
- e. the cutting authority is cruise based billing and there has been a change<sup>1</sup> in the harvest area when compared to the most recent appraisal map submitted that exceeds three hectares.

The area used for cruise based billing shall only be changed to reflect the new area when:

- i. the harvest area has decreased and the cutting authority has been amended,
  - ii. the harvest area has increased, or
  - iii. the change in harvest area described in this subsection triggers a changed circumstance under this Section.
- f. i. the cutting authority is scale-based, consists of two or more cutblocks, has expired or has been surrendered, and one or more intact cutblocks remain and greater than fifteen percent of the cutting authority area remains unharvested.
- ii. The cutting authority will be reappraised:
    - aa. excluding all applicable appraisal information associated with the intact cutblock(s), provided that at least one cutblock in the cutting authority is not an intact cutblock; or

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<sup>1</sup> Measured as the absolute change, e.g. an addition of 15 hectares and the subtraction of 15 different hectares is a 30-hectare change for the purposes of this section.

- bb. including all applicable appraisal information associated with the timber removed, provided that each cutblock in the cutting authority is an intact cutblock.
  - iii. Planned and existing road development cost estimates associated with the intact cutblock(s) that is excluded from the cutting authority reappraisal may be included in future appraisals or reappraisals.
  - iv. This subsection is only applicable to cutting authorities with an effective date on or after September 1, 2016.
2. The licensee must notify the district manager immediately of a changed circumstance.
  3. Where the district manager believes that a changed circumstance has occurred, the district manager will notify the licensee of that belief.
  4. A cutting authority area other than a cutting authority area that is the subject of a road permit or a cutting authority with fixed rates must be reappraised when a changed circumstance has occurred.
  5. Where a cutting authority area is reappraised because of a changed circumstance, any bonus bid or bonus offer in existence prior to the reappraisal does not change and remains in effect.

#### 3.3.1.1 Changed Circumstance Reappraisal Procedure

1. Where the cutting authority area must be reappraised because of a changed circumstance, the licensee shall submit to the district manager an appraisal data submission.
2. Thereafter, the reappraisal procedure shall be the procedure required by Section 3.2(2) through 3.2(11).

#### 3.3.1.2 Effective Date of Changed Circumstance Reappraisal

1. Except as provided in subsections (2) and (3) of this section, a reappraisal because of a changed circumstance under Section 3.3.1(1) is effective on the day after the effective date of the most recent appraisal or reappraisal of the cutting authority area prior to the changed circumstance reappraisal.
2. Where the changed circumstance is a result of sudden and severe damage referred to in subsection 3.3.1(1)(d), the effective date of the reappraisal is the first day of the month following the date when the event that caused the sudden and severe damage stopped on the cutting authority area.
3. A Section 3.3.8 minister directed reappraisal after January 15, 2009, will not be considered an appraisal or reappraisal for the purpose of determining the effective date of the changed circumstance reappraisal.

### **3.3.2 Annual Reappraisal of a Road Permit**

1. Subject to Sections 3.3.7 and 7.3, a cutting authority area that is the subject of a road permit must be reappraised effective February 1 of every year.
2. The stumpage rate determined under subsection (1) of this section will be a fixed stumpage rate until the cutting authority area is reappraised.

### **3.3.3 Annual Reappraisal of Salvage Logging Stumpage Rates**

1. Except where a cutting authority requires the payment of a bonus bid or a bonus offer, where the stumpage rate for a cutting authority has been determined under Section 7.4, the cutting authority area authorized for harvest under that cutting authority must be reappraised effective March 1st of every year.
2. A stumpage rate determined under subsection 1 of this section will be a fixed stumpage rate between the time that the cutting authority area is reappraised and the time that it is subsequently reappraised.

### **3.3.4 Annual Reappraisal of a Linear Tenure**

1. Subject to Section 7.7, a cutting authority area that is the subject of a linear tenure must be reappraised effective March 1 of every year.
2. A stumpage rate determined under subsection (1) of this section will be a fixed stumpage rate until the cutting authority area is reappraised.

### **3.3.5 Annual Reappraisal of a Cutting Authority in a Controlled Recreation Area**

1. Subject to Section 7.8, a cutting authority area within a controlled recreation area must be reappraised annually on the anniversary date of the cutting authority.
2. A stumpage rate determined under subsection (1) of this section will be a fixed stumpage rate until the cutting authority area is reappraised.

### **3.3.6 Annual Reappraisal of a Cutting Authority with Stumpage Rates Determined Under Section 7.5**

1. A cutting authority area with stumpage rates determined under Section 7.5 must be reappraised effective March 1 of every year.
2. A stumpage rate determined under subsection (1) of this section will be a fixed stumpage rate until the cutting authority area is reappraised.

### **3.3.7 Annual Reappraisal of a Cutting Authority in the Northern Great Bear Rainforest**

1. Subject to Section 7.10, all road permits, and a cutting authority area with an effective date on or after June 15, 2016, located within the Northern Great Bear Rainforest must be reappraised effective March 1 of every year.
2. Stumpage rates determined under subsection (1) of this section will be fixed stumpage rates until the cutting authority area is reappraised.

### **3.3.8 Minister's Direction**

1. The Minister may direct:
  - a. a determination, redetermination or variance of a stumpage rate at any time, and that
  - b. the determined, redetermined or varied stumpage rate will be effective on any future date.

#### **3.3.8.1 Minister's Direction Procedure**

1. If requested by the person responsible for stumpage determinations, the licensee shall submit to the district manager an appraisal data submission within forty-five days of the request.
2. Thereafter, the procedure for determining, redetermining or varying a stumpage rate under Section 3.3.8 shall be the same procedure as that required by subsections 3.2 (3) through 3.2 (12) except as may otherwise be directed by the minister.

### **3.4 Quarterly Adjustments**

1. Unless a cutting authority, previous manual, or a provision of this manual specifies that the stumpage rates of a cutting authority are fixed, the stumpage rate of a cutting authority is adjusted quarterly on January 1, April 1, July 1, and October 1, of each year.
2. a. At the time of the quarterly adjustment referred to in subsection (1) of this section, the stumpage rate will be recalculated in accordance with the equations applicable for the appraisal effective date and the appraisal data submission which was used in the most recent appraisal or reappraisal. The domestic log market values for cutting authorities with appraisal or reappraisal effective dates prior to March 1, 2016, and export-adjusted log market values for cutting authorities with appraisal or reappraisal effective dates on or after March 1, 2016; and CPI, each effective for the month of the adjustment, will be used in the calculation of the adjustment. All other data will remain unchanged.
- b. The procedure referred to in this subsection is conducted each quarter until the cutting authority area is reappraised or the cutting authority expires.



2. Where the volume of second growth coniferous timber in a cutting authority area is at least eighty percent of the volume of all of the coniferous timber in that cutting authority area, the cutting authority area will be appraised and reappraised as if all of the coniferous timber in that cutting authority area were second growth coniferous timber.

**4.2.2 Log Grade Percentages**

Log grade percentages are obtained for each species of timber in each cutting authority area being appraised or reappraised as described in Section 4.2.2.1, 4.2.2.2, 4.2.2.3, 4.2.2.3.1, 4.2.2.3.2 and 4.2.2.4.

**4.2.2.1 Billing History Record**

1. Except as provided in sections 4.2.2.2 (5) and (6), and 4.2.2.4, the billing history record that will be used in an appraisal or reappraisal of a cutting authority area will be determined using either Table 4-3 or Table 4-4 as may be required by this manual.
2. The date of issue of a stumpage invoice shall determine the period for which the log scale data in that invoice will be included in a billing history record.
3. Except as provided in sections 4.2.2.3.1(8) and 4.2.2.3.2(8), the billing history record shall be for a period of two years.

**Table 4-3: Billing History Record Dates**

<b>Column 1 Date of Appraisal or Reappraisal</b>	<b>Column 2 Billing History Record Ends on the Preceding</b>
January 1 to March 31	November 30
April 1 to June 30	February 28/29
July 1 to September 30	May 31
October 1 to December 31	August 31

4. Except as provided in subsection (6) of this section, where the effective date of the appraisal or reappraisal falls within the period of the year listed in Column 1 of Table 4-3, the two-year billing history record shall be for the two-year period ending on the corresponding date in Column 2 of Table 4-3 which immediately precedes the effective date of the appraisal or reappraisal.
5. Where the log grade percentages must be determined in accordance with Section 4.2.2.3.1(8) or 4.2.2.3.2(8) and the effective date of an appraisal or reappraisal falls within the period of the year listed in Column 1 of Table 4-3, the five-year billing history record shall be for the five-year period ending on the corresponding date in Column 2 of Table 4-3 which immediately precedes the effective date of the appraisal or reappraisal.
6. Where the log grade percentages must be determined in accordance with Section 4.2.2.2(7) and where the effective date of the appraisal or reappraisal falls within the

period of the year listed in Column 1 of Table 4-4, the two-year billing history record shall be for the two-year period ending on the corresponding date in Column 2 of Table 4-4 which immediately precedes the effective date of the appraisal or reappraisal.

**Table 4-4: Billing History Record Dates**

<b>Column 1 Date of Appraisal or Reappraisal</b>	<b>Column 2 Billing History Record Ends on the Preceding</b>
January 1 to 31	November 30
February 1 to 28/29	December 31
March 1 to 31	January 31
April 1 to 30	February 28/29
May 1 to 31	March 31
June 1 to 30	April 30
July 1 to 31	May 31
August 1 to 31	June 30
September 1 to 30	July 31
October 1 to 31	August 31
November 1 to 30	September 30
December 1 to 31	October 31

**4.2.2.2 Log Grade Percentage Criteria**

The person who determines the stumpage rate will apply the following criteria when determining the log grade percentages to be used for the cutting authority area being appraised or reappraised:

1. The log grade percentage is the percentage by volume that a log grade is of the total net cruise volume for the species of timber being considered.
2. Except as provided in subsection (5) of this Section and Section 4.2.2.4, the log grade percentages for a species of timber are derived from the billing history record.
3. The source of log grade percentages may vary by species of timber.
4. a. Except as provided in paragraph (b) of this subsection, before a two year billing history record for a species of timber can be used in an appraisal or reappraisal, the volume of that species of timber in that two year billing history record must be at least 25 percent of the net cruise volume of that species in

- the cutting authority area being appraised or reappraised, or 2 000 m<sup>3</sup>, whichever is greater.
- b. Where the cutting authority area being appraised or reappraised is outside of a tree farm licence area and has been authorized for harvest under a cutting authority issued under a timber licence, then before a two-year billing history record for a species of timber can be used in an appraisal or reappraisal the volume of that species of timber in the two-year billing history record must be at least 25 percent or 2 000 m<sup>3</sup> for each species of timber that comprises at least 20 percent of the cutting authority area's total net cruise volume.
5. The log grade percentages for each species of timber will be derived from the cruise compilation when:
- a. at least eighty percent of the timber in a cutting authority area being appraised or reappraised is second growth coniferous timber,
  - b. the entire net cruise volume of the cutting authority area being appraised or reappraised will be harvested using helicopter single standing stem selection, or
  - c. the cutting authority area has been authorized for harvest under:
    - i. a cutting permit entered into with a timber sales manager,
    - ii. a licence that is entered into with a timber sales manager,
    - iii. a cutting permit issued under a replaceable timber sale licence,
    - iv. a woodlot licence that does not have its stumpage rates determined under Section 7.2(1).
6. If a cutting authority is not a tree farm licence or First Nations woodland licence and has been approved for the coast problem forest stand pilot project under Section 2.2.3 and is located in the geographic area of a timber supply area, the log grade percentages will be determined as described in Section 4.2.2.3.2 based on the timber supply block where the majority of the cutting authority area's net cruise volume is located.
7. Where the cutting authority area is not a cutting authority area referred to in subsection (5)(c) of this Section and the timber in the cutting authority area has been authorized for harvest under:
- a. a cutting authority issued under a licence awarded under Section 47.3 of the *Act*,
  - b. a forestry licence to cut with cutting permits, or
  - c. a cutting authority issued under a woodland licence awarded under section

43.54 of the *Act*,

the log grade percentages for each species of timber will be derived from,

- d. the two year billing history record of all cutting authority areas of the licence authorizing harvest, if the two-year billing history record for that cutting authority includes at least 25 percent of the cutting authorities' net cruise volume of that species or 2 000 m<sup>3</sup>, whichever is greater, or
- e. where there is no such billing history record, the person determining the stumpage rate will proceed to:
  - i. Section 4.2.2.3.1(6) if the cutting authority area is within the boundaries of a tree farm licence, or
  - ii. Section 4.2.2.3.2(6) if the cutting authority area is within the boundaries of timber supply area.

8. Where:

- a. a forest licence or a tree farm licence is subdivided under Section 19 or 39 of the *Act* (the "subdivided licence"), and
- b. the licences resulting from the subdivision are held by:
  - i. the same licensee that held the subdivided licence prior to the subdivision (the "original licensee"),
  - ii. a licensee legally associated to the original licensee, or
  - iii. severally, a combination of licensees comprising, the original licensee and/or one or more licensees legally associated to the original licensee,

for the purposes of Section 4.2.2.3.1 or 4.2.2.3.2, the billing history record for each of the licences resulting from the subdivision will be the two-year history from the common pool of:

- c. the records for the subdivided licence, and
- d. all the records for the licences resulting from the subdivision,

for so long as condition (b) continues to exist.

9. Where:

- a. two or more forest licences are consolidated under Section 19 of the *Act* or two or more tree farm licences are consolidated under Section 39 of the *Act* (the "consolidated licences"), and
- b. the licence resulting from the consolidation is held by:

- i. the same licensee that prior to the consolidation held one or more of the consolidated licensees (the "original licensee"), or
- ii. a licensee legally associated to the original licensee,

for the purposes of Section 4.2.2.3.1 or 4.2.2.3.2, the billing history record for the licence resulting from the consolidation will be the two-year history from the common pool of:

- c. all the records for the consolidated licences, and
- d. the records for the licence resulting from the consolidation,

for so long as condition (b) continues to exist.

#### 4.2.2.3 Source of Log Grade Percentages for Each Cutting Authority Area

1. Except for those harvest methods, cutting authorities or cutting authority areas referred to in subsection 4.2.2.2(5), 4.2.2.2(6), 4.2.2.2(7), 4.2.2.2(8), and 4.2.2.2(9) the log grade percentages for each species of timber for the cutting authority area being appraised or reappraised will be determined in accordance with:
  - a. Section 4.2.2.3.1, where the cutting authority area is entirely within the geographic boundaries of one tree farm licence, or
  - b. Section 4.2.2.3.2, where the cutting authority area is entirely within the geographic boundaries of one timber supply area.

## 4.2.4 Haul Distance

1. Haul distance must be determined and reported on the appraisal data submission, and may contribute to the calculation of a stumpage rate as provided in Section 4.4.8.
2. The haul distance for a cutting authority area being appraised or reappraised shall be determined as follows:
  - a. For each cutblock in the cutting authority area from which any timber may be removed by road from that cutblock:
    - i. determine for that cutblock the point that is the closest point on a road to the geographical centre of the cutblock,
    - ii. determine the shortest distance by road from the point on the road determined in subparagraph (i) of this paragraph to the appraisal log dump for that cutblock, measured in kilometres (km) and rounded to the nearest 0.1 km,
    - iii. weight for that cutblock the distance determined in subparagraph (ii) of this paragraph by the net cruise volume of timber on the cutblock.
  - b. Determine the average weighted distance of all the cutblocks for which a weighted distance was determined in subparagraph (iii) of paragraph (a), rounded to the nearest 0.1 km.
  - c. Haul distance (HD) is the average weighted distance calculated in paragraph (b) of this subsection plus the rehaul distance in the case of inland water transportation as described in Section 4.4.2.
  - d. Where a rehaul is required for inland water transportation, the appraisal log dump is the final log dump at the end of the rehaul.

## 4.2.5 Marine Log Transportation

### 4.2.5.1 Point of Appraisal

1. The Point of Appraisal is **Gambier Island**.

### 4.2.5.2 Appraisal Log Dump

1. Except for those appraisal log dumps in Appendix VI that are listed in more than one district, for subsections 2, 3, 4 a) and 4 b) below, the appraisal log dump must be located in the same forest district as the cutting authority area.
2. Except as provided in subsection 3 of this section, where any timber may be removed from any part of a cutblock by road, the appraisal log dump for that cutblock that must be used in the appraisal or reappraisal of the cutting authority area is the closest location by road listed in Appendix VI to that cutblock.

3. Where any timber may be removed from any part of a cutblock by road, and a log dump exists or will exist during the removal of the timber from the cutblock at a location that is closer to the cutblock than any location listed in Appendix VI, then that log dump location is the appraisal log dump for that cutblock that must be used in the appraisal or reappraisal of the cutting authority area.
4. a. When no timber may be removed from any part of a cutblock by road, and except as provided in paragraph (b) of this subsection, the appraisal log dump for that cutblock that must be used in the appraisal or reappraisal of a cutting authority area is the closest location to that cutblock listed in Appendix VI to which logs may be yarded by helicopter or A-frame and placed in water.  
  
b. If a location to which timber will be yarded by helicopter or A-frame from the cutblock and placed in water is closer to the cutblock than any location listed in Appendix VI, then that location must be used as the appraisal log dump for that cutblock in the appraisal or reappraisal of the cutting authority area.

#### 4.2.5.3 Points of Origin Areas

1. Table 4-5 lists the points of origin areas that are delineated in the Points of Origin Areas map approved by the Director and is available at the following website:  
  
<https://www2.qa.gov.bc.ca/gov/content/industry/forestry/competitive-forest-industry/timber-pricing/coast-timber-pricing/points-of-origin>
2. The point of origin area must be reported in the appraisal data submission.



**Table 4-5 Points of Origin Areas**

<b>Point of Origin Area</b>	<b>Code</b>
Barkley-Clayoquot	BKCL
Bute Inlet	BUTE
Chilliwack-Silverhope	CHSH
Courtenay-Comox	COCO
Dewdney	DEWD
Drury-Seymour	DRSE
Esperanza	ESPE
Gilford-Knight	GKIN
Graham Island	GRIS
Harrison	HARR
Jervis-Sechelt	JEIS
Juan de Fuca	JUDF
Kelsey-Adam	KEAD
Kokish	KOKI
Lower Mainland	LOMD
Menzies-Sayward Forest	MESF
Mid-Coast	MIDC
Moresby Island	MOIS
Nahatlatch	NAHT
Nootka Sound	NOSO
North Coast	NTHC
Pitt Meadows	PIME
Port McNeill-Hardy	POMH
Quatsino Sound	QUSO
Sloquet	SLOQ
Southeast Vancouver Island	SEVI
Sproat Lake	SPLK
Squamish-Pemberton	SQPM
Sunshine Coast	SUCO
Thurlow	THUR

### 4.3 Estimated Winning Bid (EWB) Equation

1. The equation used in the calculation of the estimated winning bid (EWB) is:

$$\begin{aligned} \text{EWB } (\$/\text{m}^3) = & \text{CPIF} * [ -34.72 \\ & + 0.8349 (\text{ALP}/\text{CPIF}) \\ & + 14.90 (\text{CEDARCYPRESS}) \\ & - 0.3340 (\text{SLOPE}(1\text{-HELI})) \\ & - 38.67 (\text{HELI}) \\ & + 17.23 (\text{VPH}/1000) \\ & - 0.07456 (\text{LOCATION}) \\ & + 15.77 (\text{DFIR}2\text{G}) \\ & - 8.241 (\text{GAMBDIST}400) \\ & + 5.955 (\text{CRUISE}) \\ & - 7.493 (\text{ISOLATED}) \\ & - 3.866 (\text{LUMPSUM}) \\ & + 1.309 (\text{Ln}(\text{VOL}/1000)) \\ & + 0.8308 (\text{DISTAVGNBID}) ] \end{aligned}$$

2. The EWB shall be rounded to 2 decimal places.
3. Where the calculated EWB is less than \$0.25, the EWB shall be \$0.25.

Note: Ln = natural logarithm

## 4.4 Specified Operations

1. The specified operations in sections 4.4.1 to 4.4.9 may be considered in an appraisal or a reappraisal.

### 4.4.1 Skyline

1. A skyline adjustment expressed in  $\$/\text{m}^3$  may be calculated for those areas within a cutblock that:
  - a. are 600 metres or greater measured in a straight line horizontal distance from the centre of the closest possible landing or place where a landing may be located, and
  - b. are yarded by skyline.
2. The skyline adjustment may be calculated by adding the volume of timber to which the skyline may apply to the volume of timber to be helicopter yarded as prescribed in Section 4.2.

### 4.4.2 Inland Water Transportation

1. An inland water transportation adjustment will be determined for that part of the cutting authority area where timber must be towed on Great Central, Owikeno or Powell Lake or any other inland water authorized by the person that determines the stumpage rate in order for the timber to be transported to the point of appraisal.
2. The adjustment shall be \$5.62 per cubic metre.

### 4.4.3 Clayoquot Sound Operating Costs

1. For the purposes of this section the Clayoquot Sound area is:

That part of the Hesquiat Peninsula, Esowista Peninsula, and the islands, sea and all lands and waters draining into the Pacific Ocean from the height of land between Escalante Point and Quisitis Point.

2. An adjustment of  $\$6.95/\text{m}^3$  will be included in an appraisal or a reappraisal of a cutting authority area that is located entirely within the Clayoquot Sound area.

#### 4.4.4 Helicopter Single Standing Stem Selection

1. In this manual helicopter single standing stem selection means the harvesting of standing single trees that have been marked, limbed, undercut and wedged and then broken from the stump and removed using a helicopter.
2. This adjustment may only be included in the appraisal or reappraisal of a cutting authority area if:
  - a. helicopter single standing stem selection is the only harvest method that has been permitted by the district manager to harvest timber in the cutting authority area, and
  - b. helicopter single standing stem selection is also, the only harvest method used to harvest all of the timber in the cutting authority area.
3. The adjustment for helicopter single standing stem selection includes the cost of marking, climbing, limbing, undercutting, wedging, breaking and removal of the tree by helicopter.
4. The adjustment for helicopter single standing stem selection is \$37.78/m<sup>3</sup>.

#### 4.4.5 Destumping for Root Disease Control

1. Destumping is the activity of:
  - a. lifting and rolling of stumps out of the ground to lessen soil disturbance and root breakage,
  - b. destumping may also include the shaking of stumps to remove soil, and
  - c. raking the area immediately around the hole to remove any large root pieces.
2. A destumping adjustment will be determined for that part of the cutting authority area where destumping for root disease control is required. The treatment area must be accurately delineated and shown on the appraisal map and be included in the site plan.
3. The adjustment shall be \$1,114.00 per hectare of area that will be destumped.

#### 4.4.6 Tree Crown Modification

1. Where the protection of trees is deemed necessary by a forest professional to achieve forest management objectives, a tree crown modification adjustment may be considered in the appraisal or reappraisal.
2. For the purposes of subsection (1), tree crown modification means the removal of 25% to 50% of the tree crown of standing trees by spiral pruning or tree topping.
3. The adjustment is the sum of the costs for all of the trees that are modified divided by the total net cruise volume of the cutting authority area.

4. The area requiring tree crown modification must be shown or described on the appraisal map and the calculations in support of the appraisal submission must be available for inspection upon request by the district manager.
5. The gross number of potential stems per hectare to treat will be based on the cruise stand table for the timber type that the treatment area is located within or is adjacent to. The potential stems exclude dead and deciduous trees.
6. The rate for tree crown modification:
  - a. for each old growth coniferous tree that is modified is \$35.39, and
  - b. for each second growth coniferous tree that is modified is \$16.86.

#### 4.4.7 Ecosystem Based Management Operating Costs

1. Except as provided in subsection (2) of this section, the ecosystem based management adjustment may be considered in the appraisal of a cutting authority area that lies wholly within that part of the Coast Area when the licensee has an approved forest stewardship plan which conforms with the objectives listed under the Land Use Order to which land use objectives have been made applicable by orders made by the Minister of Natural Resource Operations pursuant to Section 93.4 of the *Land Act* entitled:
  - a. South Central Coast Order, dated July 27, 2007,
  - b. Central and North Coast Order, dated December 19, 2007, and
  - c. Haida Gwaii Land Use Objectives Order, dated December 16, 2010.
2. The ecosystem based management adjustment shall not be considered in the appraisal or reappraisal of a cutting authority area that is authorized for harvest under:
  - a. a woodlot licence referred to in Section 1(3) of the South Central or Central and North Coast orders,
  - b. a community forest agreement referred to in Section 1(4) of the South Central or Central and North Coast orders, or
  - c. the tree farm licence or non-replaceable forest licences that are referred to in Section 1(4) of the South Central Coast Order.
3. The adjustment shall be \$3.72 per cubic metre.

#### 4.4.8 Long Haul Cost

Where the haul distance (HD) determined under Section 4.2.4 is greater than 100 km, the long haul cost specified operations estimate (LHC) is calculated as follows:

$$\text{LHC } (\$/\text{m}^3) = (\text{HD} - 100) * 0.135$$

If  $\text{HD} \leq 100$ ,  $\text{LHC} = 0$

#### **4.4.9 High Development Cost**

For BCTS timber sale licences only, where the development cost estimate determined under Chapter 5, is greater than \$11.95/m<sup>3</sup>, the high development cost specified operations estimate (HDC) is calculated as follows:

$$\text{HDC } \$/\text{m}^3 = \text{DC} - 7.43$$

$$\text{If DC} \leq 11.95, \text{ HDC} = 0$$

## 4.5 Final Estimated Winning Bid

1. Subject to subsection 3 of this section the Final Estimated Winning Bid (FEWB) is the difference between the estimated winning bid and the total of the specified operations adjustments that are applicable to the appraisal or reappraisal of the cutting authority.

2. Expressed as an equation:

$$\text{FEWB} = \text{EWB} - \text{SOA}$$

Where:

EWB = The Estimated Winning Bid determined under Section 4.3.

SOA = The sum of specified operations adjustments in an appraisal or a reappraisal of a cutting authority area as may be calculated under sections 4.4.1 through 4.4.9 and expressed in  $\$/\text{m}^3$ .

3. Where the FEWB calculated is less than  $\$0.25/\text{m}^3$ , then the FEWB shall be  $\$0.25/\text{m}^3$ .

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- ii. the charge is:
  - aa. reasonable,
  - bb. does not exceed compensation that could be determined under the forestry legislation, and
  - cc. is established to the satisfaction of the district manager by the licensee by way of auditable documents.

### **5.5.1 Land Use Charge**

A land use charge may not be considered in an appraisal or a reappraisal.

## 5.6 Basic Silviculture Cost

1. Except where basic silviculture performed or to be performed on a cutting authority area is or will be funded by the Crown or an agent of the Crown a basic silviculture cost may be used in the calculation of a tenure obligation adjustment where the licensee is required to perform basic silviculture on the cutting authority area being appraised or reappraised.
2. The basic silviculture cost depends on the geographic location of the cutting authority area being appraised or reappraised as described in Table 5-5.

**Table 5-5: Basic Silviculture Cost**

Where the cutting authority area is located in:	The basic silviculture cost expressed in \$/m <sup>3</sup> is:
Campbell River Forest District	3.04
Chilliwack Forest District	5.77
<b>Coast Mountain</b> (North Coast) Forest District	6.83
Haida Gwaii Forest District	5.09
North Island - Central Coast Forest District	2.83
Sea to Sky (Squamish) Forest District	6.31
South Island Forest District	3.64
Sunshine Coast Forest District	4.31

## 5.7 Low Grade Number

1. The forest district low grade fractions by timber species as shown in Table 5-6 shall be used in the calculation of the tenure obligation adjustment to account for the low grade timber that is not subject to the appraised stumpage rate.
2. The low grade fraction for each timber species to be used in the appraisal or reappraisal of the cutting authority area shall be the fraction by timber species by the forest district in which the cutting authority area is located (refer to Table 5-6).
3. The low grade number to be used in the calculation of the tenure obligation adjustment for a cutting authority area being appraised or reappraised is the sum of the products of the net cruise volume of each timber species in the cutting authority area multiplied by the low grade fraction for that species, divided by the total net cruise volume in the cutting authority area.

**Table 5-6: Forest District Low Grade Fractions by Timber Species**

District	BA	CE	CY	FI	HE	LO	SP	WH	Deciduous
Campbell River	0.2057	0.0253	0.1437	0.0124	0.2161	0.0543	0.0304	0.0528	1.0000
Chilliwack	0.2542	0.0283	0.0774	0.0381	0.2658	0.2344	0.0522	0.3592	1.0000
Coast Mountain (North Coast)	0.1694	0.0307	0.0894	0.0652	0.1960	0.0652	0.0529	0.0652	1.0000
Haida Gwaii	0.1037	0.0385	0.0798	0.1037	0.2714	0.0529	0.0265	0.1037	1.0000
North Island - Central Coast	0.1461	0.0277	0.1043	0.0198	0.1668	0.1132	0.0500	0.0212	1.0000
Sea to Sky (Squamish)	0.2715	0.0382	0.2063	0.0444	0.3278	0.1443	0.0456	0.3660	1.0000
South Island	0.1348	0.0206	0.0429	0.0152	0.1638	0.0751	0.0205	0.1378	1.0000
Sunshine Coast	0.0957	0.0193	0.0915	0.0210	0.1678	0.2232	0.0388	0.0261	1.0000

## 5.8 Market Logger Cost

### 5.8.1 Market Logger Cost

1. The market logger cost (MLC) is used in the calculation of the tenure obligation adjustment in an appraisal or reappraisal of a cutting authority area. MLC is expressed in \$/m<sup>3</sup>.
2. Where the volume of second growth coniferous timber in a cutting authority area is less than eighty percent of the volume of all of the coniferous timber in that cutting authority area, the MLC is calculated as follow:

$$\text{MLC} = \left[ \frac{8.27 (1 - \text{HW}) - \text{BCTS}}{1 - \text{LG}} \right] + \text{CTSSO}$$

3. Where the volume of second growth coniferous timber in a cutting authority area is at least eighty percent of the volume of all of the coniferous timber in that cutting authority area, the MLC is calculated as follows:

$$\text{MLC} = \left[ \frac{6.76 (1 - \text{HW}) - \text{BCTS}}{1 - \text{LG}} \right] + \text{CTSSO}$$

4. For the purpose of subsection 5.8.1(2) and 5.8.1(3):

HW = Is the fraction of the cutting authority area's volume harvested by helicopter to a water drop

LG = Low grade number calculated under Section 5.7

BCTS = BCTS cost from Section 5.8.2

CTSSO = Competitive timber sales specified operation cost from Section 5.8.3

### 5.8.2 BC Timber Sales Infrastructure and Services

The cost of infrastructure and services provided by BC Timber Sales for competitive timber sale licences (minus specified operations in the MPS data set) is \$0.13/m<sup>3</sup>.

### 5.8.3 Competitive Timber Sales Specified Operations Adjustment

The cost of the competitive timber sales specified operation (CTSSO) already included in the competitive timber sale licences that are in the MPS dataset is \$0.25/m<sup>3</sup>.

Truck – Log Self Loading	16.2-C & 16.3		Truck – Logging (Highway) and 5-ton deck crane	134.15
Truck - Lowbed	16.2-C	5 axle unit	Tandem tractor and lowbed	110.00
Truck - Lowbed	16.2-C	7 axle unit	A or B train (or triple axle with booster)	138.60
Truck – Miscellaneous – Pilot Vehicle	16.2-A			53.55

\* includes 10% additional cost; 5% for brush guard package and 5% for hydraulic thumb.

“All Found” includes all costs, expenses and profits necessary for the project work being undertaken with an allowance for operator’s wages plus benefits (does not include a swamper). Operators are expected to report to the project site at their own expense unless there is an agreement to the contrary due to project location. Rates include insurance and WorkSafeBC costs.

“<sup>1</sup>BLUE BOOK CATEGORY” is used to locate equipment that is not listed in the “Blue Book Models” column above for the specified hourly rate, but which may be found instead in the Blue Book. Categories as applicable provide:

- Capacity in cubic feet per minute, diameter or tonnes (Drills, Rollers, Cranes)
- Capacity in yards/cubic metres (Concrete Trucks, Gravel Dump Trucks, Loaders)
- Number of axles and/or gross vehicle weight in kilograms (Logging Trucks, Lowbeds)
- Operating weight in pounds or tonnes (Excavators, Skidders, Articulated Trucks)
- Power in flywheel horsepower (Crawler Tractors, Graders)

“<sup>2</sup>BLUE BOOK MODELS” – Associated rates in \$/hour are for Blue Book equipment models for the indicated source years unless there was no data available for that time period. In these cases, the rate used is an “out-of-date” rate from the most recent source years.

b. Miscellaneous Equipment Rates (Source: 2015-2016 Blue Book)

EQUIPMENT DESCRIPTION	BLUE BOOK SECTION NUMBER	BLUE BOOK CATEGORY	*\$/HOUR
Concrete Mixer	4.4	6 cu ft (0.17 m <sup>3</sup> )	7.69
Concrete Vibrator	4.3	12’ to 21’ (3.65m – 6.10m)	5.11
Powersaw	11.1	Over 20+ inch blade; over 57cm <sup>3</sup>	3.65

\*Labour not included

c. Other All Found Equipment Rates

EQUIPMENT DESCRIPTION	\$/HOUR
Off Highway Lowbed	175.00
Truck - Logging (Off-Highway)	175.00
Log Loader	Use rate for excavator in (a) for equivalent Blue Book category

## d. Wage Rates (Source: 2014-19 United Steelworkers agreement rates)

LABOUR DESCRIPTION	GROUP	*\$/HOUR
Labourer	Group I	38.61
Roadman	Group II	38.93
Crib/Culvert Maker, Powderman	Group VII	40.89
Landingman	Group VIII	41.41
Rockdriller & Powderman (for load & blast only)	Group VII & XI	85.09
Bridgeman	Tradesman	50.64
Faller, including powersaw cost		68.04

\*Effective June 15, 2015. Includes 40% for payroll loading

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