

# TIMBER PRICING BRANCH

## Interior Appraisal Manual

Effective July 1, 2021

---

Cost Base of: 2019



This manual is intended for the use of individuals or companies when conducting business with the British Columbia Government.

Permission is granted to reproduce it for such purposes. This manual and related documentation and publications are protected under the *Federal Copyright Act*. They may not be reproduced for sale or for other purposes without the express written permission of the Province of British Columbia.



# New 2021 Interior Appraisal Manual Highlights

Section or Appendix	Description
1.1	<ul style="list-style-type: none"> <li>• Added a definition of Tethered or Winch-Assist Harvest Method.</li> </ul>
1.5.3	<ul style="list-style-type: none"> <li>• Clarified appraisal species.</li> </ul>
3.1	<ul style="list-style-type: none"> <li>• Updated the Estimated Winning Bid equation with new coefficients.</li> <li>• Changed the Real Stand Selling Price variable to account for cruise-based and scale-based timber.</li> <li>• Changed the Partial Cut variable for appraisals with more than 30% retention.</li> </ul>
3.2	<ul style="list-style-type: none"> <li>• Updated the Consumer Price Index Factor, Lumber Recovery Addons, Net Conifer Zonal Volumes and the District Average Number of Bidders.</li> <li>• Updated the Stand Selling Price variable definition.</li> <li>• Clarified the Cable Harvest variable definition.</li> <li>• Updated the Partial Cut variable definition.</li> </ul>
3.3	<ul style="list-style-type: none"> <li>• Updated the Specified Operations cost estimates.</li> </ul>
3.4	<ul style="list-style-type: none"> <li>• Updated the average CPI cost base adjustment.</li> </ul>
4.2	<ul style="list-style-type: none"> <li>• Updated the Forest Management Administration equation.</li> </ul>
4.3	<ul style="list-style-type: none"> <li>• Updated the Development cost estimates.</li> </ul>
4.4	<ul style="list-style-type: none"> <li>• Updated the Road Management cost estimates.</li> </ul>
4.5	<ul style="list-style-type: none"> <li>• Updated Basic and Enhanced Silviculture Cost Estimates.</li> <li>• Updated the Cruise Adjustment factors.</li> <li>• Updated the Root Disease Treatment equation.</li> <li>• Moved the list of enhanced silviculture regimes to Appendix 5.</li> </ul>

Section or Appendix	Description
4.6	<ul style="list-style-type: none"> <li>• Updated low grade factors for cutting authorities with less than 35% MPB damage.</li> </ul>
4.7	<ul style="list-style-type: none"> <li>• Updated Return to Forest Management, Market Logger Cost and the average CPI for the cost base.</li> </ul>
6.4.3	<ul style="list-style-type: none"> <li>• Updated the Cruise Based Salvage stumpage equation and base rate table.</li> </ul>
6.5	<ul style="list-style-type: none"> <li>• Clarified direct award partially harvested cutting authorities.</li> </ul>
6.6	<ul style="list-style-type: none"> <li>• Clarified the use of Miscellaneous Stumpage Rates.</li> <li>• Updated Table 6-7 to align with the <i>Interim Guidance for Commercial Thinning - Interior British Columbia (May 2021)</i>.</li> <li>• Moved Area-based tenures to its own subsection.</li> </ul>
6.7.1	<ul style="list-style-type: none"> <li>• Added a new section for Area-Based Stumpage Rates.</li> <li>• Added new Area-based stumpage rates for Coast Mountains, Nadina, Prince George, Skeena-Stikine and Stuart Nechako.</li> <li>• Changed the maximum tenure size from 2000m<sup>3</sup> to 10 hectares in size.</li> </ul>
Appendix 1	<ul style="list-style-type: none"> <li>• Updated equipment and labour rates.</li> <li>• Updated fuel price adjustments.</li> </ul>
Appendix 5	<ul style="list-style-type: none"> <li>• Moved geophysical clearance line categories to Section 6.7.</li> <li>• Added the enhanced silviculture regimes.</li> </ul>

# Table of Contents

---

<b>1</b>	<b>Introduction.....</b>	<b>1-1</b>
1.1	Definitions .....	1-2
1.2	Terms of Reference .....	1-8
1.2.1	Responsibility for Stumpage Determination .....	1-8
1.2.2	Stumpage Appraisal Parameters .....	1-8
1.2.3	Minimum Stumpage Rate .....	1-9
1.2.4	Numbering and Calculation .....	1-9
1.3	Point of Appraisal (POA) .....	1-10
1.4	Fully Appraised Cutting Authority Area.....	1-11
1.4.1	Cutblocks .....	1-11
1.4.2	Maximum Area .....	1-11
1.4.3	Cruise Based/Scale Based.....	1-11
1.4.4	Transportation Route .....	1-11
1.4.5	Harvest Method .....	1-13
1.5	Appraisal Data Submission Requirements.....	1-14
1.5.1	Cruise Information.....	1-14
1.5.2	Appraisal Data Forms .....	1-15
1.5.3	Appraisal Species.....	1-16
1.5.4	Appraisal Map .....	1-16
1.5.5	Documentation.....	1-16
<b>2</b>	<b>Appraisals, Reappraisals and Stumpage Adjustments.....</b>	<b>2-1</b>
2.1	Appraisals .....	2-2
2.1.1	Appraisal Data Submission Process .....	2-2
2.2	Reappraisals .....	2-3
2.2.1	Reappraisal Data Submissions.....	2-3
2.2.2	Changed Circumstances.....	2-3
2.2.3	Suddenly and Severely Damaged Timber .....	2-6
2.2.4	Minister's Direction.....	2-6
2.2.5	Insect Damage .....	2-6

2.2.6	Compilation Version.....	2-8
<b>2.3</b>	<b>Stumpage Adjustments.....</b>	<b>2-9</b>
<b>2.4</b>	<b>Correctable Errors.....</b>	<b>2-10</b>
<b>2.5</b>	<b>Redetermination of Stumpage Rate by Agreement.....</b>	<b>2-11</b>
<b>2.6</b>	<b>Post-Harvest Appraisal Reconciliation.....</b>	<b>2-12</b>
<b>3</b>	<b>Final Estimated Winning Bid.....</b>	<b>3-1</b>
<b>3.1</b>	<b>Estimated Winning Bid Equation.....</b>	<b>3-2</b>
<b>3.2</b>	<b>Estimated Winning Bid Variables.....</b>	<b>3-3</b>
3.2.1	Consumer Price Index (CPI).....	3-3
3.2.2	Real Stand Selling Price (RSP).....	3-3
3.2.3	Cedar (CE).....	3-4
3.2.4	Hemlock and Balsam (HE and BA).....	3-4
3.2.5	Larch and Yellow Pine (LA and YE).....	3-4
3.2.6	Dry Belt Fir and Yellow Pine (DRY_BELT and FIYE).....	3-4
3.2.7	Cable Harvest Method (CABLE).....	3-4
3.2.8	Average Conifer Volume (VOL).....	3-5
3.2.9	Conifer Decay (DECAY).....	3-5
3.2.10	Fire Damage (FIRE).....	3-6
3.2.11	Volume per Tree (VPT).....	3-6
3.2.12	Conifer Volume Per Hectare.....	3-6
3.2.13	Cycle Time (CYCLE).....	3-6
3.2.14	Fort Nelson – Peace Selling Price Zone (ZONE_9).....	3-8
3.2.15	Deciduous Volume (DECID).....	3-8
3.2.16	Cruise Based Cutting Authority with <35% MPB (CB).....	3-8
3.2.17	Cruise Based Cutting Authority with >35% MPB (CB).....	3-8
3.2.18	Latest Auction Year (AUCTION_YEAR).....	3-8
3.2.19	Grey Attack MPB (GREY).....	3-8
3.2.20	Ground Skidding Harvest Method (GS).....	3-8
3.2.21	Decked Timber (DECK).....	3-9
3.2.22	Average Number of Bidders (DANB).....	3-9
3.2.23	Partial Cut Harvest Method (PC).....	3-10
3.2.24	Average Slope of the Cutting Authority (SLOPE).....	3-10

3.2.25	Truck Haul Method.....	3-10
3.2.26	Blowdown Volume (BLOWDOWN).....	3-10
3.2.27	Currency Conversion Rate (EXCHANGE).....	3-10
3.2.28	12-Month Running Total Harvest (TOT_HARV_12MR).....	3-11
3.2.29	Isolated Cutting Authority (ISOLATED).....	3-11
3.2.30	Camps (CAMP).....	3-12
3.2.31	Other Attack Volume (OTHER_ATTACK).....	3-12
3.2.32	Estimated Winning Bid (EWB) Adjustment (EWB_ADJUSTMENT).....	3-12
<b>3.3</b>	<b>Specified Operations.....</b>	<b>3-13</b>
3.3.1	Water Transportation Systems.....	3-13
3.3.2	Special Transportation Systems.....	3-14
3.3.3	Skyline and Intermediate Support Skyline.....	3-15
3.3.4	Helicopter Logging.....	3-15
3.3.5	Horse Logging.....	3-15
3.3.6	High Development Cost.....	3-15
3.3.7	Uneven-Aged Forest Management.....	3-16
<b>3.4</b>	<b>Final Estimated Winning Bid.....</b>	<b>3-17</b>
<b>4</b>	<b>Tenure Obligation Adjustments.....</b>	<b>4-1</b>
<b>4.1</b>	<b>Tenure Obligation Adjustment.....</b>	<b>4-2</b>
<b>4.2</b>	<b>Administration Costs.....</b>	<b>4-3</b>
4.2.1	Forest Management Administration (FMA).....	4-3
4.2.2	Final Forest Management Administration (FFMA).....	4-4
<b>4.3</b>	<b>Development.....</b>	<b>4-5</b>
4.3.1	Development Costs.....	4-5
4.3.2	Tabular Subgrade Construction.....	4-10
4.3.3	Tabular Drainage Structures.....	4-14
4.3.4	Tabular Stabilizing Material.....	4-17
4.3.5	Tabular Cattle Guards, Fencing and Pipeline Crossings.....	4-18
4.3.6	Engineering Cost Estimates (ECE).....	4-19
<b>4.4</b>	<b>Road Management.....</b>	<b>4-23</b>
4.4.1	Road and Land Use Costs.....	4-25
4.4.2	Final Road Management.....	4-26

<b>4.5</b>	<b>Silviculture Cost Estimate (Basic and Enhanced)</b> .....	<b>4-27</b>
4.5.1	Enhanced Silviculture .....	4-29
4.5.2	Root Disease Control.....	4-30
4.5.3	Total Silviculture Cost Estimate.....	4-31
<b>4.6</b>	<b>Low Grade Percent Adjustment</b> .....	<b>4-34</b>
<b>4.7</b>	<b>Final Tenure Obligation Adjustment</b> .....	<b>4-37</b>
<b>5</b>	<b>Stumpage Rate Determination</b> .....	<b>5-1</b>
<b>5.1</b>	<b>Stumpage Rate Determination for a Cutting Authority Entered into Under a BCTS Licence</b> .....	<b>5-2</b>
5.1.1	Upset Stumpage Rates (Upset) .....	5-2
<b>5.2</b>	<b>Stumpage Rate Determination for a non-BCTS, Fully Appraised Cutting Authority</b> .....	<b>5-4</b>
5.2.1	Indicated Rate (IR) .....	5-4
5.2.2	Reserve Stumpage .....	5-4
5.2.3	Stumpage Rate.....	5-4
<b>5.3</b>	<b>Levies (Silviculture, Development, Administration)</b> .....	<b>5-5</b>
<b>6</b>	<b>Miscellaneous Policies</b> .....	<b>6-1</b>
<b>6.1</b>	<b>Coniferous Average Sawlog Stumpage Rates by Forest Zone and Species</b> .....	<b>6-2</b>
6.1.1	Community Forest Agreements.....	6-3
6.1.2	Woodlot Licences .....	6-3
6.1.3	Incidental Conifer in Deciduous Leading Stands .....	6-4
<b>6.2</b>	<b>Cutting Authorities With 5000 m<sup>3</sup> or Less Volume</b> .....	<b>6-5</b>
6.2.1	Forestry Licences to Cut for Specific Purposes (No Volume Limit) .....	6-6
<b>6.3</b>	<b>Road Permit Stumpage Rates</b> .....	<b>6-8</b>
<b>6.4</b>	<b>Salvage Timber Stumpage Rates</b> .....	<b>6-10</b>
6.4.1	Post-Harvest Material or Damaged Timber.....	6-10
6.4.2	Blanket Salvage Cutting Authorities .....	6-12
6.4.3	Cruise Based Salvage Cutting Authorities .....	6-13
6.4.4	BCTS Salvage Timber Sale Licence .....	6-15
<b>6.5</b>	<b>Decked and Partially Harvested Timber for a non-BCTS Cutting Authority</b> ..	<b>6-16</b>
<b>6.6</b>	<b>Miscellaneous Stumpage Rates</b> .....	<b>6-18</b>



**6.7 Specific Licences to Cut .....6-20**  
    6.7.1 Area-Based Stumpage Rates.....6-20

**6.8 Controlled Recreation Areas (CRAs) .....6-22**

**6.9 Cruise Based Stumpage Calculations.....6-23**

**6.10 Section 103(3) of the Act.....6-25**

**6.11 Forest Enhancement Society of BC (FESBC).....6-26**

**Appendices ..... 1**

**Appendix I Equipment and Labour Rates .....2**

**Appendix II Development Cost Proration .....7**

**Appendix III Relative Soil Moisture to Absolute Soil Moisture Conversion Table ...8**

**Appendix IV Appraisal Map Content.....13**

**Appendix V Enhanced Silviculture Regimes.....14**

**Appendix VI Appraisal Log Dumps .....16**

**Appendix VII Amortization Agreement Form - Interior .....18**

## Tables

---

Table 1-1:	Points of Appraisal .....	1-10
Table 1-2:	Interior Timber Merchantability Specifications .....	1-14
Table 3-1:	LRF Update Add-ons for MPS.....	3-3
Table 3-2:	Zonal Volume .....	3-5
Table 3-3:	Proxy District Average Number of Bidders (DANB) .....	3-9
Table 3-4:	Support Centre.....	3-11
Table 3-5:	Railway Transportation .....	3-14
Table 4-1:	FMA Regional Constants .....	4-3
Table 4-2:	Road Groups.....	4-13
Table 4-3:	Culvert Cost Estimates .....	4-15
Table 4-4:	L100, L-75 and CL/BCL-625 Bridge Cost Estimates .....	4-16
Table 4-5:	Road Management Cost Estimates.....	4-24
Table 4-6:	Cruise Adjustment Factors by Species and Selling Price Zone.....	4-28
Table 4-7:	BEC Silviculture Cost Estimates.....	4-31
Table 4-8:	Point of Appraisal (POA) Low Grade Percent Adjustment (Less than 35% R&G MPB Damage) .....	4-35
Table 4-9:	Point of Appraisal (POA) Low Grade Percent Adjustment (With 35% or more R&G MPB Damage) .....	4-36
Table 6-1:	Coniferous Average Sawlog Stumpage Rates in $\$/m^3$ .....	6-2
Table 6-2:	Community Forest Agreements and Woodlot Licences: Coniferous Average Sawlog Stumpage Rates in $\$/m^3$ .....	6-4
Table 6-3:	Coniferous Average Sawlog Stumpage Rates in $\$/m^3$ by Smallest Geographic Unit .....	6-9
Table 6-4:	Coniferous Average Sawlog Stumpage Rates for Salvage of Damaged Timber in $\$/m^3$ .....	6-11
Table 6-5:	Coniferous Average Sawlog Stumpage Rates for Salvage of Post-Harvest Material in $\$/m^3$ .....	6-12
Table 6-6:	Base Rate* for Cruise Based Salvage Cutting Authorities by Forest Zone	6-14
Table 6-7:	Miscellaneous Stumpage Rates .....	6-18
Table 6-8:	Area-Based Reserve Stumpage Rates by District .....	6-21

# 1 Introduction

---

## 1.1 Definitions

In this manual:

“**AAC**” means Allowable Annual Cut;

“**Act**” means *Forest Act*;

“**Agreement**” means a form of agreement granting rights to harvest Crown timber referred to in section 12 of the *Act*, or a pulpwood agreement;

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

“**Applicable Volume**” means:

1. Except for a reappraisal for suddenly and severely damaged timber (section 2.2.3), and subject to subsection (2) of this definition, where the harvesting is authorized on a cutting authority area under an agreement other than a BCTS licence, the Total Net Coniferous Volume;
2. Where the cutting authority is cruise based and the deciduous timber has not been reserved, the Total Net Cruise Volume; or
3. Where the harvesting is authorized on a cutting authority area under a BCTS licence, the Total Net Cruise Volume;

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

“**Appraisal Summary Report**” means the appraisal summary report from the cruise compilation for the cutting authority area;

“**Attack Volume**” means the volume of green, red, grey or other insect attack reported in the appraisal summary report;

“**BCTS**” means BC Timber Sales;

“**BCTS licence**” means a timber sale licence entered into under section 20 of the *Act*;

“**Billing history record**” means a record of log scale data derived from a record kept by 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*;

“**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*;

“**Changed Circumstance Certification**” means a Changed Circumstance Certification statement submitted in ECAS by a forest professional (refer to section 2.2.2);

“**Chipped**” means having been cut into small pieces by a chipper;

“**Comparative Cruise**” means cruise data that is used for a new cutting authority area being appraised that comes from another existing cutting authority area with similar stand and terrain characteristics;

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

“**Cruise Based**” 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:

1. A cutting permit issued under a:
  - a. Forest licence;
  - b. Timber sale licence that provides for cutting permits;
  - c. Tree farm licence;
  - d. Community forest agreement;
  - e. Woodlot licence;
  - f. Timber licence;
  - g. Community salvage licence;
  - h. Master licence to cut;
  - i. Forestry licence to cut; or
  - j. First Nations Woodland licence.
2. A timber sale licence under which cutting permits have not or will not be issued;
3. All other licences to cut; or
4. A road permit.

“**Cutting Authority Area**” means the area where timber may be harvested under the cutting authority being appraised, which has a unique timber mark;

“**Deciduous timber**” means timber that is not of a coniferous species;

“**Decked timber**” means timber that has been 100% decked at roadside;

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

**“District Manager”** means:

1. Except as provided in paragraph (2) of this definition, the district manager or district manager’s designate;
2. 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:

1. the date the stumpage rate is determined when required for advertising for competitive award;
2. the effective date of the cutting authority when the stumpage rate is determined for a cutting permit or a direct award licence;
3. for the purposes of section 103(3) of the *Act*, in respect of Crown timber that was cut, damaged or destroyed without authorization contrary to section 52(1) of the *Forest and Range Practices Act*, or damaged or destroyed within the meaning of section 27(1)(c) of the *Wildfire Act*, the day immediately preceding the date when the timber was cut, damaged or destroyed; or
4. for the purposes of section 103(3) of the *Act*, in respect of Crown timber that was removed without authorization contrary to section 52(3) of the *Forest and Range Practices Act*, the date when the timber was removed;

**“ECAS”** means the ministry’s Electronic Commerce Appraisal System;

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

**“First Fully Appraised Tributary Cutting Authority Area”** means the first tributary cutting authority area to have its appraisal submitted by the licensee in ECAS;

**“F.O.B.”** means ‘free on board’. The specified destination point at which ownership of the goods transfers from the seller to the buyer. ‘F.O.B. origin’ would mean the buyer assumes responsibility for the goods, shipping costs and insurance once the goods leave the seller’s premises;

**“Food Premises”** means a place where food is prepared and served as described in the *BC Guidelines for Industrial Camps Regulation*.

**“Forest Professional”** means a Registered Professional Forester (RPF), 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;

“**Fully Appraised**” means stand data (site specific or borrowed) has been used by GAS to calculate an indicated stumpage rate or has been included in an appraisal for a BCTS cutting authority where the upset was set at the variable cost to prepare the timber for sale;

“**GAS**” means the ministry’s General Appraisal System;

“**Harvest Method**” means ground skidding, overhead cable, helicopter or horse;

“**Harvest Method Volume**” means the net merchantable volume reported for the harvest method in the appraisal summary report;

“**Hogged Tree Material**” means tree residues or by-products that have been shredded into smaller fragments by mechanical action;

“**Interior Area**” means the North and South Areas;

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

“**Long-Term Arrangement**” for the purposes of camp specified operations, means for a period of one or more years;

“**Manual**” means *Interior Appraisal Manual*;

“**Mature Timber**” means, exclusively for the purposes of section 30 of the Wildfire Regulation of the Wildfire Act, in respect of Crown timber that was cut, damaged or destroyed without authorization contrary to section 52(1) of the Forest and Range Practices Act, or damaged or destroyed within the meaning of sections 25(1)(b) and 27(1)(c) of the Wildfire Act, timber meeting the Interior Timber Merchantability Specifications described in Table 1-2 in this manual.

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

“**Ministry**” means Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNRORD);

“**MPS**” means Market Pricing System;

“**Net Merchantable Area**” means the net area for all treatment units reported in the appraisal summary report;

“**New Construction**” means the following construction phases: subgrade construction, placement of additional stabilizing material and the construction and installation of drainage and other pertinent structures;

“**North Area**” means Northeast, Omineca, and Skeena Regions excluding that portion that lies geographically within the North Coast Timber Supply Area;

“**Original Appraisal**” means the appraisal data submission effective on the effective date of the cutting authority;

“**Partially Harvested Timber**” means timber that has been felled and/or bucked and not yet forwarded to roadside;

“**Prescribed Minimum Stumpage Rate**” means the minimum stumpage rate prescribed by the *Minimum Stumpage Rate Regulation* (BC Regulation 354/87);

“**Primary Harvesting Activities**” means the cutting and removal of timber from a cutting authority area;

“**Reconstruction or Replacement**” means replacement or structural repair of a major drainage structure (e.g. replacing stringers, cross ties, or cribbing), or major resurfacing, which means resurfacing sections of more than 0.3 km in length that were initially surfaced but have deteriorated due to long term wear and tear, where stabilizing material was not previously used, or major reconstruction, which means restoring at least 0.1 km of road (per occurrence) that requires complete rebuilding of the subgrade;

“**Regional Manager**” means a regional executive director of the Ministry or except for section 1.2.1(1)(b), the regional executive director’s designate;

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

“**Remedial Fence and Wing Fence**” means a fence that is required to remedy, reduce or manage the impact of timber harvesting activities on range management;

“**Road Permit**” means road permit or road timber mark;

“**Scale Based**” means the stumpage payable is based on a scale of the timber harvested from the cutting authority area in accordance with part 6 of the *Act*;

“**Single Unit**” means a cutblock has one continuous boundary and it is not made up of two or more pieces separated by timber that is not within the gross area of the cutblock from the cruise compilation;

“**Skyline System**” means a cable logging system used to fully suspend logs for protection of the soil, for crossing streams without damage, or to yard logs for long distances. Skyline systems may use intermediate supports to reduce the sag in long cables;

“**South Area**” means Cariboo, Kootenay-Boundary and Thompson-Okanagan Regions;

“**Species Net Volume**” means the species net merchantable volume reported in the appraisal summary report;

“**Stand as a Whole (SAAW) Pricing**” means that one stumpage rate is determined for all of the Total Net Coniferous Volume of timber on the cutting authority area. In a cruise based cutting authority, the single stumpage rate applies to the Total Net Cruise Volume;



- “**Tethered or Winch-Assist Harvest Method**” means a harvest method on slopes too steep for conventional ground-based equipment that utilizes cable winch systems to stabilize and assist the equipment used to forward/skid (and/or hoe-chuck) the timber.
- “**Timber Harvesting**” means the felling or removal of timber other than on road rights-of-way or landings on a cutblock;
- “**Timber Pricing Branch**” means the Timber Pricing Branch of the Ministry;
- “**Timber Sales Manager**” means the timber sales manager or the timber sales manager’s designate;
- “**Total Net Coniferous Volume**” means the sum of all the coniferous species net volumes reported in the appraisal summary report;
- “**Total Net Cruise Volume**” means the sum of all the species net volumes reported in the appraisal summary report;
- “**Total Net Deciduous Volume**” means the sum of all the deciduous species net volumes reported in the appraisal summary report;
- “**Tributary Cutting Authority Area**” means a cutting authority area from which timber must be transported over the road project 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 project that is developed.

## 1.2 Terms of Reference

1. Pursuant to section 105 of the *Act* the provisions of this manual are policies and procedures to be used in the determination, redetermination and variance of stumpage rates in the Interior Area and Manning Park.

### 1.2.1 Responsibility for Stumpage Determination

1. The following employees are authorized to determine, redetermine and vary stumpage:
  - a. director and employees of Timber Pricing Branch of the Ministry;
  - b. regional managers, regional timber pricing co-ordinators, and employees of the regional revenue sections of the Ministry.
2. The employees of the Timber Administration section, Resort Development Branch of the Ministry are authorized to determine or redetermine stumpage rates in accordance with section 6.8(1) or (2).

### 1.2.2 Stumpage Appraisal Parameters

1. Stumpage Appraisal Parameter (the “parameters”) means the Market Pricing System Lumber Average Market Values (AMVs), BC Consumer Price Index, 12-month Running Total Harvest Level, the Estimated Winning Bid (EWB) Adjustment and the US Dollar Exchange Rate as published each month by Timber Pricing Branch.
2. When the parameters are approved by the director and published on the Timber Pricing Branch website, they become an integral part of this manual.

<http://www2.gov.bc.ca/gov/content/industry/forestry/competitive-forest-industry/timber-pricing/interior-timber-pricing/interior-appraisal-parameters>

#### 1.2.2.1 Lumber Average Market Values (AMVs)

1. Unless otherwise specified in this section, the lumber AMVs are based on a three-month average of lumber market values, two months prior to the date of publication. Each species or species group is aggregated by selling price zone based on point of appraisal (POA) in Table 1-1.
2. Lumber market values are derived by dividing the total sales value by the total sales volume reported by licensees to Timber Pricing Branch; where
  - a. total sales value means for each species or species group the net sales reported in Canadian dollars (FOB) mill; and
  - b. total sales volume means for each species or species group all sizes and grades of rough and dressed lumber in the green and dried state; and finger-jointed lumber and machine stress rated lumber.

3. The volume that is manufactured to Canadian Lumber Standard/American Lumber Standards (CLS/ALS) is in foot board measure (fbm). Volume that is manufactured to non-CLS/ALS sizes are adjusted to equivalent CLS/ALS sizes.
4. If there is insufficient data reported, the lumber AMV for a species or species group may be determined using an alternate procedure approved by the director.

### **1.2.3 Minimum Stumpage Rate**

1. A stumpage rate or an upset determined using this manual must not be less than the prescribed minimum stumpage rate.

### **1.2.4 Numbering and Calculation**

1. The following exemplifies the numbering system used in this manual:
  1. = Chapter
  - 1.1 or 1.1.1 = Section
  - 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. Unless otherwise specified in this manual, 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.
3. Each calculation of a tenure obligation adjustment or specified operation expressed in dollars per cubic metre will be rounded to the nearest cent.

### 1.3 Point of Appraisal (POA)

1. The POA used in an appraisal is the POA for the appraised Transportation Route determined under section 1.4.4.
2. The POAs that may be considered for use in the appraisal are set out in Table 1-1 unless:
  - a. the last remaining milling facility associated with the POA is permanently rendered incapable of producing lumber and chips and a minimum of three years has passed since the mill stopped producing; or
  - b. eight years has passed since the mill stopped producing; or
  - c. the appraisal effective date is past the expiry date for that POA indicated in subsection (4) of this section.
3. For the purposes of subsection (2)(a), permanently rendered incapable means the equipment required to produce lumber and chips has either been destroyed or permanently removed from the site.
4. The following Point of Appraisal will expire on the date indicated; Kelowna (June 30, 2022); Vavenby (June 30, 2022).
5. The selling price zone used in an appraisal is the Zone indicated in Table 1-1 for the point of appraisal; except for determining the Conifer Zonal Volume (as provided in Table 3-2).

**Table 1-1: Points of Appraisal**

<b>Zone 5 (Northern Interior)</b>	<b>Zone 6 (Skeena)</b>	<b>Zone 7 (Southern Interior)</b>		<b>Zone 8 (South Cariboo)</b>	<b>Zone 9 (Fort Nelson-Peace)</b>
Bear Lake Burns Lake Engen Fort St. James Fraser Lake Houston Isle Pierre Mackenzie Prince George Quesnel Smithers Strathnaver Vanderhoof	Terrace	Adams Lake Armstrong Castlegar Creston Elko Galloway Grand Forks Kelowna Lavington Merritt	Midway Princeton Radium Revelstoke Thrums Vavenby Westbank Ymir	100 Mile House Chasm Williams Lake	Fort St. John Chetwynd

## 1.4 Fully Appraised Cutting Authority Area

### 1.4.1 Cutblocks

1. Each cutblock in a cutting authority must be
  - a. a single unit; and
  - b. contained entirely within the geographic boundary of a forest district.

### 1.4.2 Maximum Area

1. A cutting authority area must be within a polygon smaller than 7,850 hectares formed by straight lines around the furthest boundaries of the furthest cutblocks (see example in Figure 1); excluding the area of the polygon not in the Timber Harvesting Land Base (THLB).

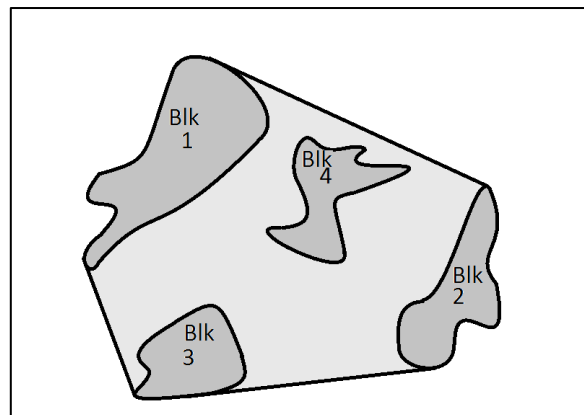


Figure 1: Example of polygon enclosing four blocks in a cutting authority.

### 1.4.3 Cruise Based/Scale Based

1. A cutting authority must be made up of cutblock(s) where
  - a. each cutblock has 35% or more red and grey MPB attacked Lodgepole pine<sup>1</sup>; or
  - b. each cutblock has less than 35% red and grey MPB attacked Lodgepole pine<sup>1</sup>.

### 1.4.4 Transportation Route

1. A cutting authority must be made up of cutblock(s) where the transportation route of each cutblock is to a common POA.
2. The collection of transportation routes in (1) cannot include more than one type of water transportation system.

---

<sup>1</sup> Net Merchantable Volume as indicated in the appraisal summary report from the cruise compilation.

3. For cutblocks located in an area with water transportation systems available, the transportation route in subsection (1) means the route with the lowest transportation cost (TC) by cutblock, using the appraisal log dump with the shortest cycle time from the cutblock, and using the following equation:

$$TC = [1.735 * (CYCLE + (0.5 * CYCLE\_INC6)) * CPIF] + [SOs * (CPI/ACPI)]$$

Where

CYCLE = as defined in section 3.2.13.

CYCLE\_INC6 = CYCLE (calculated above) – 6.0 hours. If < 0, then 0.

SOs = the sum of the water transportation system specified operations costs from section 3.3.1 (surface tow system or log barge system as indicated by the appraisal log dump location in Appendix VI) that apply to the route.

CPI = as defined in section 3.2.1

ACPI = as defined in section 3.4

CPIF = as defined in section 3.2.1

4. For cutting authorities other than those in subsection (3), the transportation route in subsection (1) means the route with the shortest cycle time (excluding barge delays) calculated using the procedure in subsection 3.2.13.
5. A transportation route must be:
- a route suitable for the transportation of logs at the time of the submission of the original appraisal in ECAS; or
  - a route that will become suitable with development projects (including amortized development) submitted in the appraisal and meet the provisions in this manual.

#### 1.4.4.1 Unsuitable Transportation Route

- The district manager may deem a transportation route unsuitable if satisfied that one or more of the following conditions would prevent the use of the transportation route.
  - In the case of a road section or bridge,
    - the road section or bridge has become impassable to logging trucks and the condition of impassibility is unrelated to lack of use or maintenance of roads under road permit obligations of any licensee, and is expected to persist for at least one year; or

- ii. the road section was originally designed for favorable hauling and has since become available for adverse hauling but is inappropriate for industrial traffic use; or
    - iii. the road section is restricted or inappropriate for industrial traffic use.
  - b. In the case of an Appraisal Log Dump, the log dump site has no authorizations in place for the use of the site for water transportation of logs, and reclamation of the site is complete.
  - c. In the case of a body of water, changes in the flow or depth of the water have rendered log transportation unfeasible and are expected to persist for at least one year.
2. A determination of a district manager is applicable to all cutting authorities issued in the same district on or after the date of the determination, until the determination has been revoked or, if expressly limited as to duration, has expired.
  3. A district manager shall revoke a determination made in his or her district when of the opinion that the condition(s) that led to the determination have ceased to exist, and the revocation is deemed to take effect on the date when those condition(s) of unsuitability ceased.

#### **1.4.5 Harvest Method**

1. The licensee must submit, and the person determining the stumpage rate must use, the harvest method(s) suitable for the site conditions and that produces the highest stumpage rate in an appraisal.
2. For non-conventional harvest methods submitted in an appraisal, the person determining the stumpage rate may request a rationale explaining why the site conditions require a higher cost method. Site conditions may be physical features, terrain stability or visual quality objectives that prevent the use of conventional harvest methods.

## 1.5 Appraisal Data Submission Requirements

### 1.5.1 Cruise Information

1. Unless otherwise specified by the director, cruise data must be gathered and compiled according to the approved interior standard timber merchantability specifications in Table 1-2 below and in accordance with the following Ministry publications:
  - a. *Cruising Manual* at the following web site:
 

<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 web site:
 

<http://www2.gov.bc.ca/gov/content/industry/forestry/competitive-forest-industry/timber-pricing/timber-cruising/cruise-compilation-manual>
2. When cruise information is submitted to the district manager or the regional manager to determine a stumpage rate or an upset stumpage rate, that information must include:
  - a. the Cruise Compilation Report;
  - b. the ASCII data files (if applicable, also the percent reduction ASCII file);
  - 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 2014.00 or later version of the approved cruise compilation program; and
  - d. a detailed description of the leave tree characteristics.
3. When requested by the district manager, a copy of the original field data must be supplied by the licensee.

**Table 1-2: Interior Timber Merchantability Specifications**

The following standard timber merchantability specifications must be used for all appraisals.	
Stumps (Measured on the side of the stump adjacent to the highest ground.) no higher than	30.0 cm
Diameter (outside bark) at stump height	
lodgepole pine: all timber that meets or exceeds	15.0 cm
all other species: all timber that meets or exceeds	20.0 cm
Top diameter (inside bark or slab thickness)	
for all species and ages, except cedar older than 141 years, all timber that meets or exceeds	10.0 cm
for cedar older than 141 years, all timber that meets or exceeds	15.0 cm
Minimum Length	
log or slab	3.0 m



### 1.5.1.1 Comparative Cruise Data

1. Except for subsection (4), if there is time to perform a full cruise, then the timber will be cruised.
2. Comparative cruise data may be used:
  - a. If the estimated volume is greater than 5,000 m<sup>3</sup>, and the regional manager has determined that the requirement to perform a full operational cruise will delay expeditious harvesting and result in further damage; or
  - b. If the estimated volume is 5,000 m<sup>3</sup> or less, and the district manager has determined that the requirement to perform a full operational cruise will delay expeditious harvesting and result in further damage.
3. Comparative cruise data may not be used where the submitting licensee has submitted appraisals for previous cutting authorities which utilized comparative cruise data in the appraisal and has not harvested these cutting authorities in a timely manner.
4. Notwithstanding the other subsections of this section, comparative cruise data may be used when the stumpage rate is determined under sections 6.2(6), 6.2.1(3) and 6.4.3 of this manual.

### 1.5.2 Appraisal Data Forms

1. Unless otherwise specified in paragraph (b) of this section, the form of ADS required by the director for:
  - a. The Market Pricing System is the Electronic Commerce Appraisal System (ECAS) which can be found at:

<http://www2.gov.bc.ca/gov/content/industry/forestry/competitive-forest-industry/timber-pricing/electronic-commerce-appraisal-system>

- i. An ADS in ECAS must be submitted by a forest professional.
- ii. Any cutting authority with a quarterly adjusting stumpage rate based on an appraisal with an original appraisal effective date prior to July 1, 2012 and that has not been subsequently reappraised using an updated appraisal data submission, shall be resubmitted in accordance with paragraph (iii) of this section through ECAS if a stumpage rate effective July 2, 2016, or later is required.
- iii. The resubmission shall use the same appraisal data as the most recent appraisal or reappraisal prior to the date of the resubmission.

If data in the resubmission is either missing or in a format that is incompatible with the procedures in the appraisal manual in effect on the effective date of the stumpage rate, the person who determines the stumpage rate shall add the missing data or change the data to be compatible prior to determining the stumpage rate.

- b. Miscellaneous timber pricing is the Interior Stumpage Rate Request Form (short form). Contact the appropriate regional office for the form. The short form must be submitted by a forest professional unless appraised under sections 6.1.1, 6.1.2 or 6.3.
2. The form used for amortization agreements under section 4.3.1.4 must be the form in Appendix VII of this manual. An electronic version of this form can be found at:

<http://www.for.gov.bc.ca/pscripts/isb/forms/forms.asp>

### **1.5.3 Appraisal Species**

1. The following commercial species are appraised as coniferous: Balsam, Cedar, Douglas-fir, Hemlock, Larch, Lodgepole pine, Spruce, Western white pine and Yellow pine.
2. For Yellow-cedar or Grand fir found in the cruise, the appraised species is Hemlock.
3. For Whitebark pine found in the cruise, the appraised species is Lodgepole pine.

### **1.5.4 Appraisal Map**

1. The appraisal map must be completed in accordance with the requirements of Appendix IV and must be submitted with the ADS in ECAS.

### **1.5.5 Documentation**

1. For each cutting authority, a licensee representative must keep proper and adequate written documentation of any advice, direction or approvals received from regional revenue staff. This includes advice on eligibility of costs or provisions in this manual. If documentation is inadequate the cost estimates or provisions may be disallowed.
2. A licensee representative must keep proper and adequate documentation of all development projects (including amortized development) and harvesting activities started on or after April 1, 2017 for each cutting authority effective April 1, 2017 or later.
  - a. For development projects with cost estimates less than \$25,000, tendered contracts, or costs derived from cost estimate tables (or cost estimate formulas) in the manual, a licensee must keep evidence that the project occurred. If evidence is inadequate or unavailable the cost estimates may be disallowed.

- b. For development projects with cost estimates \$25,000 or more, full documentation is required. If documentation is inadequate or unavailable the cost estimates may be disallowed.
3. For the purpose of subsection (2),
- a. “Projects” means ECE situations as per section 4.3.6 and subject to the definition for common subgrade construction variables in section 4.3.2.2. Works separated by a distance greater than or equal to 100 metres and drainage structures are considered separate projects.
  - b. “Evidence” means physical evidence of a project. Where physical evidence may not be evident after the completion of primary harvesting activities a licensee must keep georeferenced photos, contracts, invoices, journal entries, emails, or professional statements and record statement/and drawings (for bridges and major culverts) as documentation the project occurred.
    - i. In the case of a tendered contract, the licensee must be able to show the tender process and results.
  - c. “Full Documentation” means georeferenced photos, contracts, invoices, journal entries, or emails of the project activities. Equipment types and hours worked, hours/or days in labour or professional services, materials and costs must all be clearly detailed for each project.



## **2 Appraisals, Reappraisals and Stumpage Adjustments**

---

## 2.1 Appraisals

1. A stumpage rate, or in the case of BCTS the upset stumpage rate, (from here on referred to as “the rate”) is determined using the manual in effect on the effective date of the cutting authority (refer to section 1.1 for the definition of the effective date).

### 2.1.1 Appraisal Data Submission Process

1. The appraisal data submission process must be followed for fully appraised cutting authorities.
  - a. The licensee or BCTS representative (from here on referred to as “the submitter”) must submit an ADS to the district manager (refer to section 1.5.2 for ADS requirements) at the same time the submitter makes an application for a cutting authority.
  - b. The district manager may review the ADS for provisions of the manual the submitter may not have considered. These provisions are limited to those required under section 1.4 and 1.5.1. The district manager must give any information he or she considers relevant to the appraisal to the person who determines the stumpage rate.
  - c. The person who determines the stumpage rate (from here on referred to as “the SDM”) may review the information supplied by the district manager (in subsection b) and review the ADS for missing or incompatible data, or errors and/or provisions of the manual the submitter may not have considered and may inform the submitter of their findings.
  - d. The submitter may consider the information provided in subsection (c) and may revise the ADS.
  - e. The SDM may consider any new information provided by the submitter, and any other available information relevant to the ADS and may change the data in ECAS in order to determine the rate.
  - f. The SDM determines the rate.
  - g. Details of the rate calculation are made available from the General Appraisal System (GAS). Licensee representatives may also be notified automatically.

To request automatic notifications, send an email request to Timber Pricing Branch at [forhvap.gashelp@gov.bc.ca](mailto:forhvap.gashelp@gov.bc.ca).
  - h. For BCTS only, immediately following the award of a TSL
    - i. the submitter enters the sale information and resubmits the ADS (“second pass”); and
    - ii. the SDM determines the rate.

## 2.2 Reappraisals

1. This section applies to fully appraised cutting authorities effective on or after April 1, 2017 (for fully appraised cutting authorities effective prior to this date use section 2.2 as it was prior to April 1, 2017).
2. Where the policies and procedures in this manual require a reappraisal, the stumpage rate must be determined in accordance with the policies and procedures that are or were in effect as the case may be on the effective date of the reappraisal.
3. A reappraisal is a complete reassessment of the cutting authority on the effective date of the reappraisal, with the exception of a reappraisal directed by the Minister (section 2.2.4), an insect damage reappraisal (section 2.2.5), or a compilation version reappraisal (section 2.2.6).
4. A reappraisal may not be used to change the appraisal from a full appraisal to a tabular stumpage rate (chapter 6) or vice versa.
5. If a cutting authority is reappraised, any bonus bid or bonus offer in existence does not change and remains in effect.

### 2.2.1 Reappraisal Data Submissions

1. If a reappraisal is required, a licensee representative must submit an ADS to the district manager, and the appraisal data submission process (section 2.1.1 (b) to (g)) must be followed.
2. A changed circumstances reappraisal must only be submitted after the completion of primary harvesting activities.

### 2.2.2 Changed Circumstances

1. This section applies to all fully appraised adjustable rate cutting authorities.
2. A changed circumstance means a circumstance where:
  - a. the operations used or carried out on a cutting authority area are different from what was identified in the original appraisal. These changes in operations include:
    - i. a change in **Point of Appraisal** due to a shorter transportation route (or in the case of section 1.4.4 (3) a lower cost transportation route) becoming available with development projects submitted in another appraisal data submission by the same licensee, prior to the completion of primary harvesting activities; or
    - ii. a change in **harvest method(s)** that exceeds the greater of 1000 m<sup>3</sup> or 10% of the total net cruise volume. If the change is to a higher cost harvest method, the licensee submitter must include a rationale to explain why the change is required; or

- iii. a change in **development** that exceeds the greater of \$5,000 or 3% of the total development cost estimate in the original appraisal recalculated under chapter 4, on the basis of the development work actually carried out, to the extent this development is in accordance with chapter 4; or
  - aa. a licensee representative may choose to submit a changed circumstance reappraisal in paragraph (iii) to re-estimate only the development costs in the original appraisal if it does not meet the minimum change requirement; or
- iv. a change in the **special transportation** specified operation; or
- v. a change in the **root disease** control treatment area that exceeds the greater of 3 hectares or 3% of the total treatment area, or
- vi. a change in the **skyline harvest** area that exceeds the greater of 3 hectares or 3% of the total skyline harvest area; or
- vii. a change in the appraised **water transportation** route because a change in the water level rendered a log dump unfeasible; or
- viii. a change in the appraised **enhanced silviculture** treatment area; or
- ix. a change where **camp** was indicated in the original appraisal data submission and did not meet the criteria in section 3.2.30, or vice-versa; or
- x. a change in the **uneven-aged forest management** specified operation; or
- b. the cutting authority harvest area is different from what was used in the original appraisal. These changes include:
  - i. an absolute<sup>1</sup> change in **harvest area** that exceeds the greater of 5 hectares or 5% from an original appraisal for a **scale based** cutting authority; or
  - ii. an absolute<sup>1</sup> change in **harvest area** that exceeds 3 hectares from an original appraisal for a **cruise based** cutting authority.
    - aa. For cruise-based billing purposes in subsection (2)(b)(ii) the harvest area must only be changed to reflect the new harvest area when the harvest area has decreased and the cutting authority has been amended, or the harvest area has increased.
  - iii. Notwithstanding subsection 2.2 (1) and (2), any cutting authority amended for a **Timber Damaging Event** may include non-tributary development project costs in a reappraisal if construction of the projects started prior to the event, and they were projects included in the original appraisal.
    - aa. A Timber Damaging Event is defined as an event where trees are damaged as a result of a major wind or ice (>20 ha), wildfire or landslide.

---

<sup>1</sup>Measured as the absolute change, e.g. an addition of 5 hectares and the subtraction of 5 different hectares is a 10-hectare change for the purposes of this section.



- c. the cutting authority **reserve area** or **leave tree characteristics** are different from what was used in the original appraisal. These changes include:
  - i. for cutting authorities issued July 1, 2019 or later, an absolute<sup>1</sup> change in the reserve area(s); or
  - ii. for cutting authorities issued May 1, 2020 or later, a change in the leave tree characteristics.
3. A licensee representative must submit a certified changed circumstance reappraisal data submission; or certify that no changed circumstances have occurred since the original appraisal no later than 180 days after the completion of primary harvesting activities or the cutting authority expiry date, whichever comes first.
  - a. A licensee representative may request an extension to the 180-day submission deadline by submitting a work plan and a new submission date to the regional revenue staff. If agreed to, the proposed submission date is the new submission deadline.
  - b. A licensee representative may choose not to submit a changed circumstance reappraisal if by using the appraisal effective in the quarter with the highest stumpage rate, the difference between the total stumpage for the appraisal and the total stumpage that would be calculated in a reappraisal as a result of a changed circumstance, is less than \$5,000. Total stumpage is calculated using the rate (\$/m<sup>3</sup>) x the total net cruise volume (m<sup>3</sup>).
    - i. The provision in paragraph (b) above does not apply to a changed circumstance under subsections (2)(b)(ii) or (2)(c).
    - ii. In the case of paragraph (b) above, a licensee representative must certify and provide a rationale why a changed circumstance reappraisal data submission is not required.
4. The effective date of a changed circumstance reappraisal is the day after the effective date of the cutting authority.
5. If a person responsible for stumpage determinations believes that a changed circumstance has occurred, and the licensee fails to provide a reappraisal data submission, they may initiate a reappraisal using the information that is available to them and must notify the licensee of that action.
6. If a changed circumstance is a result of a change in subsections (2)(b) or (2)(c) and a portion of the cutting authority area does not have cruise information available, the person who determines the stumpage rate may use the best information he/she deems available.

---

<sup>1</sup> Measured as the absolute change, e.g. an addition of 0.5 hectares and the subtraction of 0.5 different hectares is a 1-hectare change for the purposes of this section.

### **2.2.3 Suddenly and Severely Damaged Timber**

1. A licensee or BCTS representative may submit a reappraisal data submission for suddenly or severely damaged timber. Notwithstanding subsection 2.2 (1), the submission must be within 90 days of the date when the event that caused the sudden and severe damage stopped on the cutting authority area.
2. At least 15% of the total net cruise volume must be suddenly and severely damaged.
3. If a licensee was responsible or failed to comply with the Wildfire Act or Wildfire Regulations this section does not apply.
4. Only the standing timber remaining on the cutting authority area after the sudden and severe damage may be considered in the reappraisal data submission.
5. 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.

### **2.2.4 Minister's Direction**

1. The Minister may at any time direct the determination, redetermination or variance of a stumpage rate.
2. The Minister must direct the determination, redetermination or variance of a stumpage rate effective on a future date.
3. The determination, redetermination or variance must be made in accordance with any other directions that the Minister may direct.
4. A licensee representative must submit to the district manager a reappraisal data submission, if requested by the district manager within 45 days of the Minister's direction.
5. Where a reappraisal is warranted but there isn't any timber remaining on the cutting authority area to apply the redetermined stumpage rate to, the reappraisal is redundant and not required.

### **2.2.5 Insect Damage**

1. a. A cutting authority with an adjustable stumpage rate may be reappraised on or after April 1, 2006 in accordance with this subsection if the licensee submits a revised ADS to the district manager.
  - i. Cutting authorities that have not been reappraised in accordance with this section may be reappraised once on or after July 1, 2014 during the remaining term and all extensions.
  - ii. Cutting authorities that have been reappraised once in accordance with this section prior to July 1, 2014 may be reappraised once on or after July 1, 2014 during the remaining term and all extensions.

- iii. Cutting authorities that have been reappraised twice in accordance with this section prior to July 1, 2014 may not be reappraised in accordance with this section.
- b. The revised appraisal data submission is the appraisal data submission that was used in the most recent reappraisal of the cutting authority area prior to the revision, hereinafter referred to in this section as the original ADS, with changes permitted only to the cruise data in the original ADS in accordance with the paragraphs (c) and (d) of this subsection.
- c. Subject to subsection (1)(d) of this section, the licensee may update the insect attack and the down tree code information for all the original trees in each plot in the field for codes 1, 2, 3, 5, 6, 7, 8, E and G as defined in the Cruising Manual and recompile the cruise for the cutting authority area by using the cruise data from the cruise in the original ADS for the plots in that part of the cutting authority area where timber has been harvested and combining that with the cruise data with updated insect attack and down tree codes for the plots in that part of the cutting authority area where timber has not been harvested.
- d. If a cutting authority area is reappraised due to a changed circumstance or suddenly and severely damage timber (in accordance with section 2.2.2 or 2.2.3) and the effective date of the reappraisal is prior to an insect damage reappraisal for that cutting authority area under this section, then the cutting authority area must be reappraised subsequent to the reappraisal using only the same information and effective date as the original insect damage reappraisal under this section (except for information that has changed as a result of the reappraisal under section 2.2.2 or 2.2.3).
- e. Notwithstanding any other paragraph of this section, other data must be changed if it is required by the manual in effect at the time of the reappraisal and was not submitted in the original ADS.

#### 2.2.5.1 Insect Damage Reappraisal Procedure

- 1. The insect damage reappraisal procedure is the procedure required by section 2.2.1.

#### 2.2.5.2 Effective Date of an Insect Damage Reappraisal

- 1. The effective date of an insect damage reappraisal is the first day of the month following the month in which the reappraisal is submitted in ECAS.

**2.2.6 Compilation Version**

1. Notwithstanding section 2.2 (1) and (2), a licensee representative may submit a reappraisal data submission for a cutting authority with the cruise data recompiled using a newer compilation version approved in the cruise compilation manual.
2. The reappraisal data submission must be the ADS that was used in the most recent appraisal or reappraisal of the cutting authority area prior to the new compilation revision, with changes only permitted to the reappraisal data submission as a result of the recompilation of the cruise data.
3. The reappraisal data submission must be submitted in ECAS no later than 6 months after the effective date of the amended cruise compilation manual.
4. The effective date of the reappraisal is the day after the date of the most recent appraisal or reappraisal for the cutting authority.

## **2.3 Stumpage Adjustments**

1. Unless otherwise specified by this manual or by the Minister, and subject to section 6.6, a stumpage rate must be adjusted quarterly on each of January 1, April 1, July 1 and October 1, of each year.
2. The adjustment will be the recalculation of the stumpage rate that was determined in the most recent appraisal or reappraisal by using:
  - a. the appraisal data used in the most recent appraisal or reappraisal;
  - b. the manual in effect on the effective date of the most recent appraisal or reappraisal;  
and
  - c. the stumpage appraisal parameters that the director approves for use in the recalculation of stumpage rates for that quarter.
3. The stumpage rate for a cutting authority issued for a woodlot licence that meets the criteria in section 6.1.2(2) must be adjusted quarterly.

## 2.4 Correctable Errors

1. In this section, a correctable error means:
  - a. an error in transcribing or compiling approved cruise field data or in the application of approved loss factor and taper equations,
  - b. an error in a calculation made as part of the appraisal data submission,
  - c. an error in transcribing the data from an appraisal data submission or in performing the calculations specified in the manual, or
  - d. an error in the calculation or application of published appraisal parameters.
2. Where a person believes that a correctable error has been made in a stumpage determination, that person must give written notice of the correctable error as follows:
  - a. in the case of an appraisal or a reappraisal, the notice must be given to the regional manager, and in the case of a quarterly adjustment, the notice must be given to the director, and
  - b. the notice must identify the stumpage determination, the correctable error, and the cause of the correctable error to the extent reasonably possible.
3. The regional manager or the director, upon receipt of the notice must determine whether or not a correctable error was made.
4. Where the regional manager or the director determines that a correctable error has not been made, the person who determined the stumpage rate or the director must notify the person who gave the notice of the correctable error.
5. Where the regional manager or the director determines that a correctable error has been made, then:
  - a. the regional manager or the director will notify the person who gave the notice of the correctable error,
  - b. the regional manager or the director will take reasonable steps to ensure that all licensees who may have been affected by the error are informed of the decision, and
  - c.
    - i. where the regional manager determines that a correctable error has been made in an appraisal or a reappraisal the cutting authority area must be reappraised only to correct the error.
    - ii. the effective date of the reappraisal must be the first day of the month following the date on which the notice of the correctable error was received by the regional manager.
  - d.
    - i. where the director has determined that a correctable error has been made in the calculation of a quarterly stumpage adjustment, the adjustment must be correctly recalculated, and
    - ii. the effective date of the redetermined rate must be the first day of the month following the date on which the notice of the correctable error was received by the director.

## **2.5 Redetermination of Stumpage Rate by Agreement**

1. If within twenty-one days of the date of determination or redetermination of a stumpage rate (the “original stumpage rate”) the licensee and an employee of the ministry authorized under section 1.2.1 (the “employee”) agree to a redetermination consistent with the version of the manual used for the original stumpage rate, the employee may redetermine the original stumpage rate.
2. The stumpage rate redetermined under subsection (1) must be effective on the same date as the original stumpage rate.
3. The licensee and the employee may agree to extend the twenty-one-day period referred to in subsection (1).

## **2.6 Post-Harvest Appraisal Reconciliation**

1. Regional revenue staff may review fully appraised data submissions (not including BCTS) based on a stumpage revenue risk management framework.
2. Licensee representatives will be notified of any cutting authorities selected for review within 60 days of a changed circumstance reappraisal data submission and/or certification in ECAS that no further changes have occurred.
3. The review of cutting authorities selected in subsection (1) will be completed within 12 months of a changed circumstance reappraisal data submission and/or certification in ECAS that no further changes have occurred.



### **3 Final Estimated Winning Bid**

---

### 3.1 Estimated Winning Bid Equation

1. The variables defined in section 3.2 and the equation below are used to calculate the estimated winning bid (EWB).

$$\begin{aligned}
 \text{EWB} &= \text{CPIF} * \\
 (\$/\text{m}^3) & [ 26.37 \\
 & + 0.4930 * \text{RSP} * \text{SB} \\
 & + 0.3730 * \text{RSP} * \text{CB} \\
 & + 1.257 * \text{CE} \\
 & - 129.1 * \text{CE} * \text{CEDAR\_DECAY} \\
 & - 14.88 * \text{HE} \\
 & - 5.870 * (\text{BA} + 2 * (\text{BA} - 0.5) * \text{BA50}) \\
 & - 23.20 * \text{LAYE} \\
 & - 3.709 * (\text{FIYE}) * \text{DRY\_BELT} \\
 & - 29.59 * \text{CABLE} \\
 & + 2.634 * \ln(\text{VOL}/1000) \\
 & - 14.24 * \text{SB} * (\text{DECAY} - \text{OTHER\_ATTACK}) \\
 & - 22.04 * \text{FIRE} \\
 & + 8.056 * \ln(\text{VPT}) \\
 & - 1.735 * (\text{CYCLE} + (0.5 * \text{CYCLE\_INC6})) \\
 & - 6.573 * \text{ZONE\_9} \\
 & - 20.67 * (\text{DECID} - \text{BLOWDOWN}) * \text{CB} \\
 & + 4.076 * (\text{CB} * (1 - \text{RG35})) \\
 & + 0.6860 * (\text{CB} * \text{RG35}) \\
 & - 6.283 * \text{AUCTION\_YEAR} \\
 & - 20.72 * \text{GREY} * \text{CB} * \text{RG35} \\
 & - 0.01031 * \text{GS\_SLOPE} * \text{GS\_FRACTION} \\
 & + 25.83 * \text{DECK} \\
 & + 1.974 * \text{DANB} \\
 & - 2.527 * \text{PC} \\
 & - 26.17 * \text{PC20} \\
 & - 0.04267 * \text{SLOPE} \\
 & - 29.26 * (\text{BLOWDOWN} - \text{GREY}) \\
 & - 51.39 * \text{EXCHANGE} \\
 & + 0.3663 * \text{TOT\_HARV\_12MR} \\
 & - 0.05444 * \text{ISOLATED} * (\text{DISTANCE} - 100) \\
 & - 1.591 * \text{CAMP} \\
 & - 58.23 * \text{OTHER\_ATTACK} \\
 & + \text{EWB\_ADJUSTMENT} ]
 \end{aligned}$$

If EWB less than  $\$0.25/\text{m}^3$  then  $\text{EWB} = \$0.25/\text{m}^3$

Note:  $\ln$  = natural logarithm.

## 3.2 Estimated Winning Bid Variables

### 3.2.1 Consumer Price Index (CPI)

1. CPIF is the consumer price index factor calculated as  $CPI/156.6$ ; and
2. CPI is the Monthly B.C. Consumer Price Index as published every month in the Stumpage Appraisal Parameters (refer to section 1.2.2).

### 3.2.2 Real Stand Selling Price (RSP)

1. RSP ( $\$/m^3$ ) is the Stand Selling Price divided by the CPIF (defined above).
2. Stand Selling Price ( $\$/m^3$ ) is the volume-prorated sum of the Coniferous Species Selling Price.
3. Coniferous Species Selling Price ( $\$/m^3$ ) = Species Lumber AMV /1000 x Species Appraisal LRF
4. Species Lumber AMV ( $\$/mbm$ ) is the monthly species lumber average market value as published in the Stumpage Appraisal Parameters (refer to section 1.2.2).
5. Species Appraisal LRF = Species Cruise LRF + Species LRF Update Add-on
6. Species Cruise LRF is from the cruise compilation; unless
  - a. If the cruise LRF for Lodgepole pine (LO) has been reduced for Mountain Pine Beetle, the reduction must be added back as follows:  
  

$$\text{Final LO Cruise LRF} = \text{LO Cruise LRF} + (\text{LO green attack volume} * 3 + \text{LO red attack volume} * 33 + \text{LO grey attack volume} * 83) \div \text{LO pine volume}.$$
7. Species LRF Update Add-ons are from Table 3-1 (for the selling price zone in which the cutting authority is located).

**Table 3-1: LRF Update Add-ons for MPS**

Species	Zone 5 (Northern Interior)	Zone 6 (Skeena)	Zone 7 (Southern Interior)	Zone 8 (Southern Cariboo)	Zone 9 (Ft. Nelson-Peace)
Lodgepole pine	103	77	98	122	91
Spruce	124	103	122	143	109
Balsam	116	97	111	136	100
Douglas-fir	93	-	85	112	-
Larch	89	-	85	112	-
Cedar	68	48	67	88	-
Hemlock	70	51	70	93	-
White pine	87	-	83	108	-
Yellow pine	-	-	86	116	-

8. CB (Cruise-Based) is 1 if the cutting authority is cruise-based, 0 if scale-based.
9. SB (Scale-Based) is 1 if the cutting authority is scale-based, 0 if cruise-based.

### **3.2.3 Cedar (CE)**

1. CE is the fraction of Total Net Coniferous Volume that is cedar.
2. CEDAR\_DECAY is the cedar decay % from the appraisal summary report/100.

### **3.2.4 Hemlock and Balsam (HE and BA)**

1. HE is the fraction of Total Net Coniferous Volume that is hemlock.
2. BA is the fraction of Total Net Coniferous Volume that is balsam.
3. BA50 is 1 if BA is > 0.5, otherwise BA50 = 0

### **3.2.5 Larch and Yellow Pine (LA and YE)**

1. LAYE is the fraction of Total Net Coniferous Volume that is larch and yellow pine.

### **3.2.6 Dry Belt Fir and Yellow Pine (DRY\_BELT and FIYE)**

1. FIYE is the fraction of Total Net Coniferous Volume that is Douglas fir and yellow pine.
2. DRY\_BELT for cutting authorities located in the Rocky Mountain or 100 Mile House Districts is 1.
3. DRY\_BELT for cutting authorities located in the Dry Belt Douglas fir Zones (as per the table in the Cruising Manual) is the fraction of the Net Merchantable Area of the cutting authority that is located in Dry Belt Douglas fir Zones. For subzone/variants that do not appear in the table, the following logic applies:
  - a. if the subzone is very dry (begins with x) then the zone/subzone combination is Dry Belt.
  - b. if the BEC zone is IDF, MS or PP and the subzone is dry (begins with d) then the zone/subzone combination is Dry Belt.
  - c. if the subzone is not very dry or dry (does not begin with x or d) then the zone/subzone combination is not Dry Belt.

### **3.2.7 Cable Harvest Method (CABLE)**

1. CABLE is the fraction of total harvest method volume that is appraised as overhead cable, tethered or winch-assist, or skyline harvest methods (refer to sections 1.1 and 3.3 for harvest method definitions).

### 3.2.8 Average Conifer Volume (VOL)

1. VOL for BCTS cutting authorities is the Total Net Coniferous Volume.
2. VOL for a Small Volume Tenure Cutting Authority is the greater of the sum of all AACs for all the licenses (including lump sum tenures) that the licensee has in the same TSA (as the cutting authority being appraised) or the Total Net Coniferous Volume.
  - a. A Small Volume Tenure Cutting Authority means a cutting authority where the sum of all AACs for all the licenses (including lump sum tenures) that the licensee has in the same TSA (as the cutting authority being appraised) is less than the zonal volume in Table 3-2 (for the selling price zone in which the cutting authority is located).

A list of Small Volume Cutting Authorities is maintained by Timber Pricing Branch and is available on the web at:

<https://www2.gov.bc.ca/gov/content/industry/forestry/competitive-forest-industry/timber-pricing/interior-timber-pricing/interior-small-volume-table>

3. VOL for Major Tenure Cutting Authorities is the volume in Table 3-2 (for the selling price zone in which the cutting authority is located).
  - a. A Major Tenure Cutting Authority means a cutting authority that does not meet the criteria in subsections (1) or (2).

**Table 3-2: Zonal Volume<sup>1</sup>**

Zone	Total Net Coniferous Volume (m <sup>3</sup> )
5	46,518
6	50,635
7 OK	41,587
7 SE	36,767
8	44,926
9	44,262

### 3.2.9 Conifer Decay (DECAY)

1. DECAY is the prorated coniferous species decay % (from the appraisal summary report)/100.
2. Scale Based (SB) is 1 if the cutting authority is scale-based, 0 if cruise based.
3. See the Other Attack Volume variable for a definition of OTHER\_ATTACK.
4. If (DECAY – OTHER\_ATTACK) is <0 then (DECAY – OTHER\_ATTACK) = 0

<sup>1</sup> For the purposes of applying the volume variable in the estimated winning bid equation, first determine the applicable selling price zone for the cutting authority area from Table 1-1. Then if the SP zone is zone 7, use the descriptions below to pick the appropriate zonal volume from Table 3-2 based on which district the cutting authority area is located in.

7OK = Cascades, Okanagan Shuswap, 100 Mile House, and Thompson Rivers Districts excluding Kamloops TSA Block A.

7SE = Prince George, Rocky Mountain and Selkirk Districts plus Kamloops TSA Block A.

**3.2.10 Fire Damage (FIRE)**

1. FIRE is the prorated coniferous species fire % (from the appraisal summary report)/100.

**3.2.11 Volume per Tree (VPT)**

1. VPT is the cutting authority average net volume per tree (all species - from appraisal summary report).

**3.2.12 Conifer Volume Per Hectare**

1. Conifer Volume Per Hectare does not currently contribute to the calculation of a stumpage rate.

**3.2.13 Cycle Time (CYCLE)**

1. CYCLE = PRIMARY + SECONDARY cycle time.
2. CYCLE\_INC6 is CYCLE – 6.0 hours. If < 0, then 0.
3. PRIMARY is the cycle time for the appraised Transportation Route determined under section 1.4.4 and deemed to include all costs of loading, hauling, weighing, unloading, return time, and unavoidable delays.
4. If a district has developed standard cycle time schedules from specific road junctions to log dumps or the point of appraisal, the person who determines the stumpage rate must use these schedules to calculate the primary and secondary cycle time, except to the extent that he or she considers variation necessary to account for sudden and significant changes in road accessibility not reflected in the existing schedules.
5. The primary and secondary cycle time are calculated using distances each rounded to the nearest 0.1 km.
6. SECONDARY is the cycle time when logs must be truck hauled following dewatering/unloading.
  - a. To determine the secondary cycle time, use distances from the reload site to the closest mill associated with the point of appraisal. In the case of multiple reload sites, use the reload site that results in the shortest cycle time to the mill.

**3.2.13.1 Cycle Time Procedure (Truck Haul Only)**

1. Establish the geographical center point of each cutblock and project a line from this point to the nearest road, marking the intersection of the line and the nearest road as the cutblock junction.
  - a. In the case of helicopter logging, the nearest road in (1) is the nearest road suitable as a drop point.
2. Determine the cycle time from the cutblock junction in subsection (1) by road to the common junction.

- a. In-block road speeds from the cutblock junction to the cutblock boundary must use road speeds of 10 km/h loaded and 15 km/h empty to a maximum 1.0 km. For road speeds beyond 1.0 km the district schedules and in-block road speeds are used.
  - b. For this subsection the common junction means the nearest point from the cutblock junctions in subsection (1) over which all appraised timber on the cutting authority area must travel on the way to the point of appraisal.
3. Weight the cycle times in subsection (2) by the Total Net Cruise Volume for each cutblock to determine the weighted average cycle time to the common junction.
  4. Determine the cycle time from the common junction by road to the closest mill associated with the point of appraisal.
    - a. In the case of a route to the point of appraisal involving rail transportation, determine the cycle time from the common junction by road to the appraisal place of unloading for placement on railcars.
  5. Sum the times calculated under subsection (3) and (4) and add an estimate for unavoidable delay of 93 minutes for cable yarding systems or 78 minutes for all other harvesting systems.

#### 3.2.13.2 Cycle Time Procedure (Truck and Water Transportation Combined)

1. Establish the geographical center point of each cutblock and project a line from this point to the nearest road, marking the intersection of the line and the nearest road as the cutblock junction.
  - a. In the case of helicopter logging, the nearest road in (1) is the nearest road suitable as a drop point.
2. Determine the cycle time from the cutblock junction in subsection (1) by road to the log dump.
  - a. In-block road speeds from the cutblock junction to the cutblock boundary must use road speeds of 10 km/h loaded and 15 km/h empty to a maximum 1.0 km. For road speeds beyond 1.0 km the district schedules and in-block road speeds are used.
  - b. In the case of a changed circumstance reappraisal due to low water levels (refer to section 2.2.2 (2)(a)(vii)), determine the cycle time for the transportation route (refer to section 1.4.4) and the route for the next closest log dump (with the same water transportation system), and weight the cycle time by the Total Net Cruise Volume for each location.
  - c. A log dump means a location listed in Appendix VI; and that has not been determined unsuitable under section 1.4.4.1; or any location not included in Appendix VI that has in place authorizations allowing use of the location as a transfer point for water transportation of timber.
3. Weight the cycle times in subsection (2) by the Total Net Cruise Volume for each cutblock to determine the weighted average cycle time.
4. Sum the times calculated under subsection (3) and add an estimate for unavoidable delay of 93 minutes for cable yarding systems or 78 minutes for all other harvesting systems.

**3.2.14 Fort Nelson – Peace Selling Price Zone (ZONE\_9)**

1. ZONE\_9 is 1 if the cutting authority is appraised with selling price zone 9, otherwise Zone 9 = 0.

**3.2.15 Deciduous Volume (DECID)**

1. DECID is the fraction of the Total Net Cruise Volume that is the Total Net Deciduous Volume.
2. If (DECID – BLOWDOWN) is <0 then (DECID – BLOWDOWN) = 0.
3. See the Blowdown Volume variable for a definition of BLOWDOWN.
4. See the Cruise Based Cutting Authority variable for a definition of CB.

**3.2.16 Cruise Based Cutting Authority with <35% MPB (CB)**

1. CB is 1 if the cutting authority is cruise-based, 0 if scale based.
2. RG35 is 1 if Total Net Coniferous Volume of timber on the cutting authority area is comprised of 35% or greater red and grey Mountain Pine Beetle attacked Lodgepole Pine, otherwise RG35 = 0.

**3.2.17 Cruise Based Cutting Authority with >35% MPB (CB)**

1. See above for definitions of CB and RG35.

**3.2.18 Latest Auction Year (AUCTION\_YEAR)**

1. AUCTION\_YEAR = 1.

**3.2.19 Grey Attack MPB (GREY)**

1. GREY is the fraction of Total Net Coniferous Volume that is grey Mountain Pine Beetle attacked Lodgepole pine.
2. See above for definitions of CB and RG35.

**3.2.20 Ground Skidding Harvest Method (GS)**

1. GS\_SLOPE is (GSCCPC\_Slope)<sup>2</sup> or 1225 whichever is less
2. GSCCPC\_Slope is [(GSCC\_Slope15 \* GSCC\_Vol + GSPC\_Slope15 \* GSPC\_Vol) / (GSCC\_Vol + GSPC\_Vol)]
3. GSCC\_Slope15 is (GSCC Slope -15%) or 0 whichever is greater.
4. GSCC\_Slope is the slope of the cutting authority area that is to be ground skid clear cut.
5. GSPC\_Slope15 is (GSPC Slope -15%) or 0 whichever is greater.
6. GSPC\_Slope is the slope of the cutting authority area that is to be ground skid partial cut.



7. GSCC\_Vol is the volume in m<sup>3</sup> of the cutting authority area that is to be ground skid clear cut.
8. GSPC\_Vol is the volume in m<sup>3</sup> of the cutting authority area that is to be ground skid partial cut.
9. GS\_FRACTION is the fraction of harvest method volume that is appraised as ground skid clear cut and ground skid partial cut.

### 3.2.21 Decked Timber (DECK)

1. DECK is the fraction of total cutting authority volume that has been decked and/or partially harvested in the timber sale licence. Total cutting authority volume = total net cruise volume + volume of decked/partially harvested timber + right-of-way volume (standing and external to cutblocks).

### 3.2.22 Average Number of Bidders (DANB)

1. DANB is the average number of bidders for the proxy district, in which the cutting authority area is located (see Table 3-3).

**Table 3-3: Proxy District Average Number of Bidders (DANB)**

District	Proxy District	TFL #	Geographic Area of TSA	TSA#	Supply Block	DANB
DCC	DCC		Williams Lake	29	Other than A, B, C, D	3.0
	DCH		Williams Lake	29	A, B, C, D	2.4
DCS	DCS					3.4
DFN	DFN					1.0
DKA	DHW	18	Robson Valley Kamloops	17 11	A	2.7
	DKA		Excluding proxy district DHW			3.7
DKM	DKM					1.9
DMH	DMH					3.6
DMK	DMK					2.1
DND	DND					3.0
DOS	DOS					3.1
DPC	DPC					1.7
DPG	DHW	18	Robson Valley Kamloops	17 11	A	2.7
	DPG		Excluding proxy district DHW			3.2
DQU	DQU					3.1
DRM	DRM					2.3
DSE	DAB	3, 8, 23	Arrow Boundary	1 2		2.9
	DCO	55, 56	Golden Revelstoke	7 27		2.2
	DKL		Kootenay Lake	13		2.5
DSS	DSS					2.6
DVA	DVA		Vanderhoof	24	D, F	2.2
	DJA		Fort St. James	24	A, B, C, E	2.6

**3.2.23 Partial Cut Harvest Method (PC)**

1. PC is the fraction of harvest method volume that is appraised as partial cut.  $PC = (100 - \text{CAPCUT \%})/100$ . See section 4.5 for definition of CAPCUT %. The 80% limit in the definition of CAPCUT in section 4.5 does not apply.
2. PC20 is for cutting authorities with greater than 20% partial cut retention levels.  $PC20 = (PC - 0.2)/0.8$ .
3. If  $PC20 > 1$  then  $PC20 = 1$ . If  $PC20 < 0$  then  $PC20 = 0$ .

**3.2.24 Average Slope of the Cutting Authority (SLOPE)**

1. SLOPE is the cutting authority average slope (%) from the appraisal summary report.

**3.2.25 Truck Haul Method**

1. Haul method does not contribute to the calculation of a stumpage rate but must be determined for the transportation route (refer to section 1.4) to the point of appraisal and reported in the appraisal data submission.
2. The haul method is considered Off-highway when the entire transportation route is over roads administered under the *Industrial Roads Act* and Forest Service Roads as defined in the *Act*.
3. The haul method is considered Highway when a portion of the transportation route is over roads administered under:
  - a. the *Transportation Act*, or
  - b. the *Industrial Roads Act* and Forest Service Roads (as defined in the *Act*) where prolonged known road restrictions (e.g., bridge load limit, narrow road, through rock cut, Regulations under the *Workers Compensation Act*, etc.) prevent the use of oversize loads.

**3.2.26 Blowdown Volume (BLOWDOWN)**

1. BLOWDOWN is the fraction of the Total Net Cruise Volume that is the Total Blowdown Volume. It is calculated using the volume weighted average blowdown % by harvest method.
2. If  $(\text{BLOWDOWN} - \text{GREY}) < 0$  then  $(\text{BLOWDOWN} - \text{GREY}) = 0$ .
3. See the Grey Attack MPB variable for a definition of GREY.

**3.2.27 Currency Conversion Rate (EXCHANGE)**

1. EXCHANGE is the Bank of Canada – US Exchange Rate US\$/C\$ (3-month average). This rate is published monthly in the Interior Appraisal Parameters.

**3.2.28 12-Month Running Total Harvest (TOT\_HARV\_12MR)**

1. TOT\_HARV\_12MR is the total Interior harvest volume over the previous 12 months, expressed in millions of cubic metres. This volume is published monthly in the Interior Appraisal Parameters.

**3.2.29 Isolated Cutting Authority (ISOLATED)**

1. ISOLATED is 1 if the DISTANCE is >100 km, otherwise ISOLATED is 0.
2. DISTANCE (km) is the straight-line distance from the Centre of the Cutting Authority to the closest support centre listed in Table 3-4.
3. The Centre of the Cutting Authority is determined by weighting the distance from the geographic center point of each cutblock in the cutting authority by the Gross Area of each cutblock.
4. Notwithstanding subsection (2),
  - a. a cutting authority geographically located in the Peace District must use the Fort St. John support centre;
  - b. a cutting authority geographically located in the Mackenzie District, Stuart Nechako District or Robson Valley TSA must use the Prince George support centre; and
  - c. a cutting authority geographically located in the Kamloops TSA block A must use the Kamloops support centre.

**Table 3-4: Support Centre**

Support Centre	Albers X	Albers Y
Castlegar	1607319	511171
Chilliwack	1294782	467153
Cranbrook	1739304	553889
Fort St. John	1318482	1260855
Kamloops	1401994	644576
Kelowna	1468497	562390
Penticton	1463073	518247
Prince George	1213091	995542
Quesnel	1234626	891124
Terrace	831972	1060276
Vernon	1478764	605572
Williams Lake	1264550	797941

**3.2.30 Camps (CAMP)**

1. CAMP is the fraction of the applicable volume appraised as camp. An entire cutblock(s) volume must be included in the applicable volume (i.e. no splitting cutblocks).
2. Workers who work on the cutblock(s) must reside in a camp and travel each day of work during timber harvesting and hauling operations from the camp to the cutting authority area.
3. To qualify as a camp, the camp must:
  - a. be comprised of buildings or structures of a permanent or semi-permanent nature. For the purposes of this definition, a structure with axles/wheels (such as a “travel trailer”) does not qualify;
  - b. provide accommodations including ‘food premises’;
  - c. be located outside municipal boundaries and communities or settlements along a highway corridor, and
  - d. be approved by the regional appraisal coordinator.
4. A list of approved camps is available on the Timber Pricing Branch website and is the official record.

**3.2.31 Other Attack Volume (OTHER\_ATTACK)**

1. OTHER\_ATTACK is the fraction of Total Net Coniferous Volume that is insect attack other than Defoliators or Mountain Pine Beetle attacked Lodgepole pine.

**3.2.32 Estimated Winning Bid (EWB) Adjustment (EWB\_ADJUSTMENT)**

1. EWB\_ADJUSTMENT is the EWB adjustment as published every month in the Stumpage Appraisal Parameters (refer to section 1.2.2).

### 3.3 Specified Operations

1. Subject to section 3.3.1(1), a specified operation cost estimate described in this section may be included in an appraisal data submission if it is used in the harvesting or transportation of timber on the cutting authority and meets the requirements.
  - a. In the case of a Timber Sale Licence the cost estimate is only included if it is required, or for high development costs (refer to section 3.3.6).
2. Specified operation cost estimates may be weighted according to the applicable volume. For Water and Special Transportation systems, and Uneven-aged Forest Management, the applicable volume must include the entire cutblock(s) volume (i.e. no splitting cutblocks).

#### 3.3.1 Water Transportation Systems

1. A water transportation cost estimate is included in an appraisal data submission if the transportation route selected for the purposes of section 1.4.4(3) includes the water transportation system.

##### 3.3.1.1 Surface Tow System

1. Towing is the transportation of logs by water and is deemed to include all costs of dumping, booming, developing and operating dumping and booming grounds, and towing.
2. The cost estimate may include an amount for each of the following:
  - a. Dump and Boom
    - i. Reservoir and Marine = \$4.90/m<sup>3</sup>  
(Reservoir: Arrow, Kinbasket, Ootsa, Revelstoke, and Williston)
    - ii. Natural Lake = \$2.50/m<sup>3</sup>
  - b. Tow
    - i. Reservoir and Marine = \$2.91/m<sup>3</sup>  
(Reservoir: Arrow, Kinbasket, Ootsa, Revelstoke, and Williston)
    - ii. Natural Lake = \$1.60/m<sup>3</sup>
  - c. Dewater and Reload = \$4.06/m<sup>3</sup>  
(Only considered if a dam transfer is required or if logs are dewatered and reloaded on trucks for further transportation to the mill yard)

##### 3.3.1.2 Log Barge System

1. Barging is the transportation of logs by barge and is deemed to include all analogous costs involved in the barging of logs.
  - a. Log Barge = \$16.06/m<sup>3</sup>

### 3.3.2 Special Transportation Systems

#### 3.3.2.1 Rail Transportation

1. Rail transportation is the transportation of logs by rail and deemed to include all costs associated with servicing the appropriate cutting authorities, (excluding all on-site costs of owning and operating a camp facility).
2. The cost estimate for rail transportation may include an amount for each of the following:
  - a. Truck-to-Rail Transfer = \$4.06/m<sup>3</sup>  
(Only considered if railway transportation is used in combination with truck haul transportation)
  - b. Railway transportation is based on the following table for the points of origin shown.

**Table 3-5: Railway Transportation**

Origin	Cost Estimate	Point of Appraisal
Leo Creek	\$13.18/m <sup>3</sup>	Fort St. James
Lovell	\$17.31/m <sup>3</sup>	Fort St. James
Bear Lake	\$24.27/m <sup>3</sup>	Fort St. James
Minaret Creek	\$26.66/m <sup>3</sup>	Fort St. James
Niteal	\$23.23/m <sup>3</sup>	Fort St. John

#### 3.3.2.2 Barge Transportation (Used for Truck Haul)

1. Barge transportation (used for truck haul) is the transportation of logging trucks by private barge/ferry where a transportation route is interrupted by a body of water and is deemed to include all costs of servicing the appropriate cutting authorities (including the operation of a bubble-system where applicable).

The cost estimate (regardless of ownership) is \$4.55/m<sup>3</sup>.

#### 3.3.2.3 Barge Transportation (Not Used for Truck Haul)

1. Barge transportation (not used for truck haul) is the transportation of crew when a cutting authority can be served only by water, and daily (operating days only) ferry/barge services are feasible for crew transportation.

The cost estimate (regardless of ownership) is \$1.29/m<sup>3</sup>.

### 3.3.3 Skyline and Intermediate Support Skyline

1. Except as provided in paragraph 4 of this section, a skyline specified operation cost estimate may be included in an appraisal for each cut block where the average yarding distance (slope) is greater than 300 metres, or intermediate supports are used.
2. The average yarding distance is determined by:
  - a. drawing a series of transects (minimum four) with their origin at a tower landing, being equi-angle apart and measured to the back-line. This is done for each block; blocks will not be amalgamated for the purpose of average yarding distance calculation.
  - b. yarding distance will be measured as slope distance from the centre of the tower landing to the falling boundary.
  - c. the sum of transect lengths divided by the number of transects equals the average yarding distance.
3. Where the ministry and the licensee agree that forest and land management is better served by the use of a “skyline system” in a particular logging chance, then the average yarding distance greater than 300 metres requirement is waived.
4. Cut blocks where the average yarding distance is 600 metres or greater (measured horizontally) will be considered as helicopter in the appraisal.
5. The specified operation cost estimate is: \$1.21/m<sup>3</sup> for the harvest method volume appraised as skyline.

### 3.3.4 Helicopter Logging

1. The specified operation cost estimate is \$122.41/m<sup>3</sup> for the harvest method volume appraised as Heli.

### 3.3.5 Horse Logging

1. The specified operation cost estimate is \$8.67/m<sup>3</sup> for the harvest method volume appraised as horse.

### 3.3.6 High Development Cost

1. For BCTS timber sale licences only, where the development cost estimate (DC) determined under chapter 4 is greater than \$3.49/m<sup>3</sup>, the high development cost specified operations estimate (HDC) is calculated as follows:

$$\text{HDC } \$/\text{m}^3 = \text{DC} - 1.60$$

$$\text{If } \text{DC} \leq 3.49, \text{ HDC} = 0$$

### **3.3.7 Uneven-Aged Forest Management**

1. In some areas within the drier portions of the Interior, uneven-aged forest management is used to meet forest management objectives. This specified operation may be applied only where an uneven-aged stand is maintained by removing mature timber, either as single scattered individuals or in small groups at relatively short intervals, repeated indefinitely.
2. The uneven-aged forest management specified operation may be applied:
  - a. where greater than 50% of the net cruise volume (before leave tree reductions) has been retained, and
  - b. in the:
    - i. interior Douglas-fir (IDF) BEC zone, or
    - ii. sub-Boreal Pine-Spruce (SBPS) BEC zone, where the net cruise volume (before leave tree reductions) is greater than 70% Douglas-fir, or
    - iii. sub-Boreal Spruce (SBS) BEC zone, where the net cruise volume (before leave tree reductions) is greater than 70% Douglas-fir and the cutting authority is within a legally designated ungulate winter range.
3. The specified operation cost estimate for uneven-aged forest management is \$1.50/m<sup>3</sup> (in addition to the partial cut contribution in section 3.1).



### 3.4 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 specified operations that are applicable to the appraisal or reappraisal of the cutting authority area.
2. Expressed as an equation:

$$FEWB = EWB - \left[ \frac{TSO}{1 - LG} \right]$$

$$TSO = SO \times (CPI \div ACPI)$$

Where:

TSO = Total Specified Operation (\$/m<sup>3</sup>)

EWB = The Estimated Winning Bid determined under section 3.1.

SO = The sum of the applicable specified operations in the appraisal or a reappraisal of a cutting authority area as may be calculated under section 3.3 expressed in \$/m<sup>3</sup>.

CPI = Monthly BC Consumer Price Index (refer to section 3.2.1).

ACPI = 153.1 (the average CPI for the cost base (2018/19))

LG = Low Grade percent adjustment (refer to section 4.6)  
(for cruise based cutting authorities, LG = 0)

3. Where the FEWB calculated under subsection (2) of this section is less than \$0.25/m<sup>3</sup>, then the FEWB must be \$0.25/m<sup>3</sup>.



## **4 Tenure Obligation Adjustments**

---

## 4.1 Tenure Obligation Adjustment

1. Except where a cutting authority area is the area authorized for harvest under a timber sale licence entered into under section 20 of the *Act*, and subject to subsection (2) of this section, the types of costs that may be used in the calculation of the tenure obligation adjustment (TOA) in the appraisal or reappraisal of a cutting authority area are:
  - a. the final forest management administration cost,
  - b. the total development cost,
  - c. the final total road management cost, and
  - d. the total silviculture cost.
2. A cost referred to in subsection 1 of this section may only be used in the appraisal or reappraisal of a cutting authority area if the holder of the cutting authority will incur that kind of cost:
  - a. when exercising an authority or carrying out an obligation under the cutting authority, or
  - b. subject to section 4.3, when carrying out an activity on a road when acting under the authority of the Crown, a road permit holder, a road use permit holder, or a private road owner.
3. In this chapter:
  - a. "development" means road development, cattleguards, fencing and pipeline crossings.
  - b. "road" includes bridges, drainage structures and any other structures that are part of the road.
4. The tenure obligation adjustment is calculated under section 4.7.

## 4.2 Administration Costs

### 4.2.1 Forest Management Administration (FMA)

1. Forest management administration (FMA) costs are those costs directly related to supervision and administration of the activities listed below such as:
  - Office Operations,
  - Cruising,
  - Environmental Protection,
  - Consultants fees (section 4.3.6),
  - Engineering (bridge inspections, road layout, survey including geotechnical surveys, and design, other than those applicable as engineered cost estimate),
  - Suitable Secondary Stand Structure Survey.
  - Archaeological surveys,
  - Right-of-way easements,
  - Foreshore and other land leases,
  - Tree marking beetle probing & pheromone baiting,
2. The forest management administration cost estimate in an appraisal is determined as follows:

$$FMA (\$/m^3) = \text{Constant} + (0.0011 * CP \text{ Slope}^2) - (0.0149 * CP \text{ VPH})$$

Where:

CP Slope<sup>2</sup> is the square of the average slope from the Cruise Appraisal Summary Report.

CP VPH is the Total Net Cruise Volume / Net Merchantable Area from the Cruise Appraisal Summary Report.

Constant is the amount in Table 4-1 (for the region in which the cutting authority is geographically located).

3. If the equation in subsection (2) yields less than the minimum in Table 4-1 then use the minimum amount. If the equation yields more than the maximum in Table 4-1 then use the maximum amount.

**Table 4-1: FMA Regional Constants**

Region	Constant	Min (\$/m <sup>3</sup> )	Max (\$/m <sup>3</sup> )
Northeast	11.6680	7.15	8.86
Skeena	11.2865	3.47	9.26
Omineca	11.0709	5.19	9.87
Cariboo	12.8047	8.69	11.75
Thompson-Okanagan	12.9403	7.28	11.79
Kootenay-Boundary	12.6958	6.23	11.83

**4.2.2 Final Forest Management Administration (FFMA)**

1. For cruise based cutting authorities:

$$\text{FFMA } (\$/\text{m}^3) = \text{FMA } (\$/\text{m}^3)$$

2. For scale based cutting authorities:

$$\text{FFMA } (\$/\text{m}^3) = \text{FMA } (\$/\text{m}^3) * \frac{[\text{TNCV } (\text{m}^3) + \text{D}(\text{m}^3)]}{\text{TNCV}(\text{m}^3)}$$

Where:

TNCV = Total Net Coniferous Volume

D = Total Net Deciduous Volume

## 4.3 Development

### 4.3.1 Development Costs

1. The total development cost estimate in an appraisal data submission must be determined in accordance with, and subject to, the conditions of this section.
2. The two categories of development are:
  - a. New construction projects; and
  - b. Reconstruction, reactivation, upgrade or replacement projects.
3. A development cost estimate is calculated for each constructed, reconstructed, reactivated, upgraded or replaced road, bridge or other drainage structure required on Crown land, or on private land (as provided in section 4.3.1.2), in order for the licensee to access Crown timber authorized for harvest.
4. The total development cost estimate is all the development cost estimates calculated under subsection 3 in accordance with the procedures in the document titled “Specifications: The Interior Market Pricing System.”
5. The two methods of estimating development costs are as follows:
  - a. Tabular cost estimate: A tabular cost estimate is made in accordance with sections 4.3.2 through 4.3.5 when the project is a new construction project, other than a situation listed in paragraph (b).
  - b. Engineering cost estimate (ECE): an ECE is made in accordance with section 4.3.6 when:
    - i. a new construction project is a situation listed in section 4.3.6(8), or,
    - ii. a Combo road provided for in subsection (6) of this section; or
    - iii. the project is a reconstruction, reactivation, upgrade or replacement project.
6. Where at least 20% of a length of new road subgrade construction is made of ECE eligible sections (as described in subsection 4.3.6 (8) (a) to (f)) the entire length of new road subgrade construction may constitute an ECE project. The length of new road (referred to as a “combo road”) must be measured from a POC to a POT or a road junction to a POT (i.e. road junctions are not considered a POT for the purposes of this definition). Examples of potential combo road configurations are illustrated below in Figure 2.

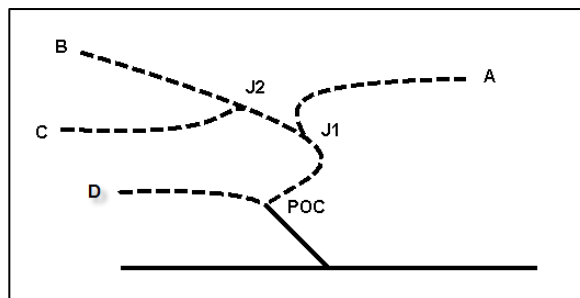


Figure 2: Combo Road Examples – POC to A, B, or C; POC to D; J1 or J2 to a POT.

7. A development project cost estimate must only be used in an appraisal data submission for a tributary cutting authority.
8.
  - a. A development project cost estimate must only be used in an appraisal data submission for a cutting authority under the same licence authorising the development; unless approved by the regional appraisal coordinator or apportioned in accordance with section 4.3.1.4.
  - b. The costs in paragraph (a) may be shared by two or more licensees. If this is the case, there must be a written agreement between the parties. A licensee’s share of these costs may be apportioned in accordance with section 4.3.1.4.
  - c. Development projects identified for future cutting authorities in the original appraisal (as per appendix IV (f)) cannot be used in a reappraisal for the same cutting authority.
9. Where a licensee undertakes a new construction project or a reconstruction or replacement project using materials that it has either purchased from a person who is not at arm’s length from the licensee or that it has previously used at another location, the cost estimate of the project may only include the cost of:
  - a. dismantling the materials at the site where they were previously used,
  - b. transporting the materials to the project location, and
  - c. installing the materials at the project location.
10. No development costs for a project may be included in an appraisal or reappraisal where they have been paid for by another party, including the provincial or federal government.
11. Where a road that is administered by the Ministry of Transportation and Infrastructure requires reconstruction or an upgrade in order to be used for the hauling of Crown timber, the cost of the project may not be used in an appraisal or reappraisal unless the use of the cost of that project has received prior approval from the person who determines the stumpage rate.
12. Notwithstanding subsection (7), an upgrade project cost estimate as per section 4.3.6 (8) (k)(ii) may be submitted in an appraisal data submission for a bridge structure administered by a non-ministry authority when timber from the cutting authority area will travel over the bridge structure.
13. No cost may be considered in an appraisal or reappraisal if the cost was as a result of the licensee’s negligence, or failure to comply with legislation.
14. Where proration is required for section 4.3.1.1 and 4.3.1.2:

$$\text{Crown Share} = \text{Total Estimated Cost} \times \frac{\text{Appraised Timber Volume}}{\text{Total Timber Volume}}$$

Where:

Crown Share (\$) = Dollar amount prorated to stumpage-bearing timber in the cutting authority being appraised.



Total Estimated Cost (\$)	= Dollar amount of the total development cost estimate.
Appraised Timber Volume (m <sup>3</sup> )	= Volume of Crown timber that is tributary to the project and under the control of the licensee or a company legally associated with the licensee, including volume in all areas contributing to the allowable annual cut determination.
Total Timber Volume (m <sup>3</sup> )	= Total volume of Crown and private timber that is tributary to the project and under the control of the licensee or a company legally associated with the licensee.

In all cases volumes are estimated from the latest approved operational or inventory cruise data and maps of the area within the drainage to the height of land.

The Crown share is a dollar amount which is included in the appraisal of a tributary cutting authority, subject to section 4.3.1.4.

Development cost estimate is prorated according to the outline below (see also Appendix II).

#### 4.3.1.1 Development Cost Estimates on Crown Lands

1. Development providing access to appraised timber only:

Total estimated costs are included in the appraisal.

2. Development providing access to non-appraised timber or non-timber resources only:

Cost estimates are not included in the appraisal.

3. Development in appraised timber areas that provide access to both the appraised timber and non-appraised timber or non-timber resources in a tenure held by the licensee or company legally associated with the licensee:

All cost estimates are prorated between appraised timber and non-appraised timber or non-timber resources as determined by the person who determines the stumpage rate. The appraised timber portion is then included in the appraisal.

#### 4.3.1.2 Development Cost Estimates on Private Land

1. When a new or reconstructed road or structure on private land is required for Crown timber extraction, the estimated cost of the road or structure will be included in the appraisal of a tributary cutting authority according to the procedures of section 4.3.1 and the following:

- a. If development provides access to appraised timber only, the total estimated costs are included in the appraisal.

- b. If development provides access to non-appraised timber only, cost estimates are not included in any appraisal.
- c. If development provides access to both non-appraised and appraised timber, all cost estimates are prorated between non-appraised and appraised timber (section 4.3.1) and then the Crown portion is included in the appraisal.

#### 4.3.1.3 Existing Roads and Structures

1. The following are defined as existing roads for the cutting authority being appraised and are not eligible for inclusion in the development cost estimates:
  - a. Constructed roads that have been previously considered in appraisals of Crown timber within another cutting authority.
  - b. Roads previously constructed and used to haul non-appraised timber (excluding right-of-way).
  - c. Roads previously constructed all or in part for purposes unrelated to logging the cutting authority area being appraised.
  - d. Roads previously constructed, repaired or reconstructed on private land before August 1, 1996.
2. Winter roads over muskeg or organic soils that use snow and ice for a driving surface are not considered as existing roads.
3. If the existing road requires reconstruction, reactivation, upgrade or replacement after August 1, 1996, the cost estimate is made as described in section 4.3. If the existing road is on private land, road and land use costs may be included in the appraisal as per section 4.4.1.
4. A road on private land that has previously been included in an appraisal because it was required for only short-term timber extraction must continue to be included upon reappraisal.

#### 4.3.1.4 Amortization Agreements

1. The regional manager may enter into a written agreement with the licensee(s) authorizing the distribution of a portion of a development project(s) cost estimate to one or more licences and cutting authorities where
  - a. the development costs for the authorized project(s) are required to access one or more cutting authorities; and
  - b. the development cost exceeds \$4.00/m<sup>3</sup> exclusive of development costs apportioned to the first fully appraised cutting authority under any prior agreement under this section.

2. An agreement under subsection (1) is subject to the following conditions:
  - a. For the purposes of this section, “authorized project” means a project that the person who determines the stumpage rate has accepted as consistent with this manual.
  - b. For development projects completed prior to a request for an amortization agreement, the development cost estimate must reflect the actual development work based on equipment type and hours worked, hours/or days in labour or professional services, materials and costs.
  - c. The agreement must identify any future tributary timber included in the agreement by a unique identifier for each future cutting authority along with the costs being apportioned to each cutting authority identified in the agreement.
  - d. The development cost estimate apportioned to a tributary cutting authority under an amortization agreement must be used in the appraisal or reappraisal of the tributary cutting authority in the amount specified in the agreement. The amount specified may not be revised with reference to the cost base of the manual in effect on the effective date of the tributary cutting authority.
  - e. Costs for in-block development are not eligible for inclusion in the agreement unless the person who determines the stumpage rate is satisfied that they are required to access future tributary timber.
  - f. The agreement is entered into only for the purposes of determining a stumpage rate and confers no obligation on the Crown to compensate the licensee for any unamortized costs.
  - g. The agreement must be signed by the licensee and the regional manager, and must not be for a term, including extensions, longer than ten years unless otherwise approved by the regional manager.
  - h. The apportionment specified in the agreement under this section may be adjusted once during the total term of the agreement, provided the adjustment is between or among only those tributary cutting authorities included in the agreement that have not yet been issued at the time of the adjustment.
  - i. One additional tributary cutting authority that was not previously identified in the agreement may be added once during the total term of the agreement.
  - j.
    - i. If the amortization agreement is approved prior to development work being started, the agreement must be amended post-development to reflect the actual non-tabular ECE development work based on the equipment type and hours worked, hours/or days in labour or professional services, materials and costs, and redistributed among the same licences and cutting authorities, at the same proportion originally identified in the agreement.
    - ii. Cutting authorities included in the agreement must use the amended development costs to determine a changed circumstance under section 2.2.2 (2)(a)(iii).
3. The regional manager will not enter into any new extended road amortization agreements for cutting permits issued under a woodlot licence with an effective date after November 30, 2008.

### 4.3.2 Tabular Subgrade Construction

1. Tabular costs are determined using the procedures and criteria in this section for the total length of road required to remove the timber from the cutting authority area.

#### 4.3.2.1 Subgrade Construction Definition

1. The subgrade construction cost estimate includes:
  - a. clearing,
  - b. grubbing,
  - c. stripping,
  - d. debris disposal,
  - e. stump removal,
  - f. ditch construction,
  - g. turnout construction (not landings),
  - h. material costs, and
  - i. installation of culverts with diameters under 950 mm or the equivalent cross-section area or single log abutment culverts up to 3.4 m span.
2. The subgrade construction cost estimate excludes:
  - a. right-of-way felling and logging, and
  - b. rock drilling, explosives, loading of explosives and blasting.

#### 4.3.2.2 Subgrade Construction Variables

For appraisal purposes the following subgrade construction variables are recognized:

1. Section length: (L)
  - a. Each section should be representative of a single soil moisture code. Section lengths are recorded to the nearest 0.1 km. Each section should be 1 km or longer, although some individual section lengths less than 1 km but greater than or equal to 0.100 km are acceptable for extreme variations of slope or % rock. The section length includes that portion traversing through landings.
  - b. All road segments less than 0.100 km, are to be aggregated with other adjacent road sections, making appropriate adjustments to average site conditions using the distance-weighted averages for the site variables for that section.
  - c. A short spur road less than 0.100 km may be aggregated with a similar road section.

## 2. Road Types:

- a. Long Term (LT) - A long term road is a road with a continuous raised sub-grade and ditch line. The raised sub-grade and ditch line may be interrupted for a short section <100 m in length (e.g., when crossing a short section of rock or at the crest of a hill). In flat terrain the ditch line may simply be the depression created when sub-grade material is excavated to create a raised sub-grade.
- b. Short Term (S) - A short term road is a road with the stumps removed and a bladed running surface. There may be elements of ditching and elevated grade, particularly around wet areas but these features are not continuous.
- c. Snow/Ice Road - A snow/ice road is a single lane seasonal winter road including turnouts, with a flat road profile that is built with a combination of snow, ice and dirt, on a surface that may or may not have been stumped. The driving surface is built up using multiple layers of snow and ice such that extra stabilizing material costs are not applicable. A flat road profile means the side slope is less than or equal to 15% and there is minimal side cut. Minimal means that cuts into mineral or organic soil must not exceed 0.5 m in depth for distances up to 0.1 km. Seismic lines being used for roads, that have not previously been used as roads, will be considered as new construction and qualify as snow/ice roads provided they fall within the above criteria.

## 3. Uphill Side Slope: (SLOPE %)

Uphill side slope % may show a variation of (+/- 15% about the average) within any section length and represents the average of all slopes in the section to a maximum of 50%. To derive an average for uphill side slope %, several representative cross-section measurements are taken along the section length and the sum of one-half of the distance on each side of the measurement is applied as a weight against the measurement at that cross-section. The uphill side slope % is measured at right angles to the road centreline and is recorded to the nearest integer. Where the road is located on a bench, the uphill side slope of the bench is used.

## 4. Percent Rock: (ROCK %)

Rock includes bedrock and large boulders (each greater than 1.5 m in diameter). It may be rippable or may require drilling and blasting. Rock % may show a variation (+/- 15% about the average) within any section length and represents the average of all rock % in the section to a maximum of 50%. To derive an average % rock, representative cross-section measurements are taken along the section length and the % rock calculated. The sum of one-half of the distance on each side of where the measurements were taken is applied as a weight against the % rock calculated at that cross-section. The percent rock is determined as follows:

$$ROCK \% = \frac{h^2}{H^2} \times 100$$

Where:

h = the vertical cut height of all rock measured from the bottom of the ditch.

H = the total vertical cut height of all materials above the bottom of the ditch.

To determine the percent rock for roads not yet constructed, constructed roads on similar land/rock forms are used as a guide. Alternately, where estimates of rock volume from commercial road design programs are available for tabular sections, that information may be used to estimate the rock %.

#### 5. Soil Moisture Regime Class (SMR):

Those biogeoclimatic zones/subzones with site series identified as “M”, “VM” or “W” in the dark shaded area of the table in Appendix III are considered “Wet” for appraisal purposes. The zones/subzones with site series identified as “SD” and “F” in the light shaded area are considered “Moist”. Those zones/subzones with the site series identified as “ED”, “VD”, “MD” in the unshaded area are considered “DRY”.

#### 6. Biogeoclimatic Zone Abbreviations Used in Section 4.3.2.3

ESSF - Engelmann Spruce - Subalpine Fir  
 ICH - Interior Cedar Hemlock  
 SBS - Sub Boreal Spruce  
 BWBS - Boreal White Black Spruce

#### 4.3.2.3 Subgrade Construction Cost Equations

For each road type, except snow/ice roads, the subgrade cost estimate in \$/km is determined from the equation for the appropriate road group.

Road Group	Equation
1	Refer to subsection 4.3.6(8)(q)
2	$3,239 + (6,026 * ICH) + (9,799 * LT)$
3	$8,589 + (184 * SLOPE\% * LT)$
4	$7,618 + (172 * SLOPE\%) + (5,025 * LT)$
5	$8,066 + (187 * SLOPE\% * LT)$
6	$6,636 + (106 * SLOPE\%) + (-1,366 * BWBS) + (3,565 * LT)$
7	$4,666 + (3,171 * LT) + (7,758 * ESSF) + (5,752 * SBS)$
8	$4,243 + (143 * SLOPE\%) + (4,399 * LT)$
9	$9,026 + (7 * SLOPE\%^2) + (8,025 * LT)$
10	$7,888 + (237 * SLOPE\%) + (5,629 * LT)$
11	$7,218 + (348 * SLOPE\%) + (16,624 * LT)$
12	$5,580 + (265 * SLOPE\%) + (13,259 * LT)$

Where:

Road groups are defined in Table 4-2.

LT = as defined in section 4.3.2.2. 1 if a long-term road. Otherwise LT = 0.

SLOPE % = as defined in section 4.3.2.2.

WET = 1 if the Absolute Soil Moisture Code is WET. Otherwise WET = 0.

ESSF = 1 if road construction is within this biogeoclimatic zone.  
Otherwise ESSF = 0.

ICH = 1 if road construction is within this biogeoclimatic zone.  
Otherwise ICH = 0

SBS = 1 if road construction is within this biogeoclimatic zone.  
Otherwise SBS = 0

BWBS = 1 if road construction is within this biogeoclimatic zone.  
Otherwise BWBS = 0

#### 4.3.2.4 Subgrade Construction Road Groups

1. For tabular subgrade construction and stabilizing material cost equations, the road groups in Table 4-2 must be used.
2. Woodlot and Timber Licence cutting authorities are assigned to the road group for the area in which they are geographically located.

**Table 4-2: Road Groups**

Road Group #	Districts Included	Within the Geographic Boundary of a TSA, SB and TFL
1		Cascadia TSA Blks 9, 10, 11 Kalum TSA, TFLs 1, 41 Nass TSA Pacific TSA Blk 28A, 28B
2	Skeena Stikine	
3	Nadina	
4		Williams Lake TSA, SBs J, K & L Prince George TSA, SBs G & H, TFLs 30, 53 Quesnel TSA, SBs E through I, TFL52 100 Mile House TSA, SBs G & H Cascadia TSA Blks 5, 6, 7
5		Prince George TSA, SBs C, D, E, F & I, TFL 52 Blk B <sup>1</sup> , Cascadia TSA Blk 8
6		Mackenzie TSA, SBs G through P, Prince George TSA SB's A & B
7	Peace	Mackenzie TSA, SBs A through F

<sup>1</sup> Portion of TFL 52 that was within the former TFL5

	Fort Nelson	
8		Williams Lake TSA, SBs A through I Quesnel TSA, SBs A through D 100 Mile House TSA, SBs A through F
9	Cascades	TFLs 15, 49, 59, Okanagan TSA, SBs 1 through 5 Kamloops TSA SBs 2, 3, 4, TFL 35
10	Rocky Mountain	Boundary TSA, TFL 8
11		Arrow TSA, TFL 23, 3, 33 Golden TSA Kootenay Lake TSA Revelstoke TSA, TFLs 55, 56 Okanagan TSA SBs 8, 9 Cascadia TSA Blks 1 through 4
12		Kamloops TSA SB 1, TFL 18 Williams Lake TSA, SBs M & N Okanagan TSA, SBs 6, 7 Robson Valley TSA

#### 4.3.2.5 Snow and Ice (Winter) Roads

The subgrade cost estimate for new snow and ice roads is \$5,297 /km.

### 4.3.3 Tabular Drainage Structures

1. An appraisal may include a cost estimate for large drainage structures only where their requirement is substantiated by field data. All pipe culverts under 950 mm in diameter or the equivalent cross-section area and all single log abutment culverts up to 3.4 m span length are included in the subgrade cost estimates (see section 4.3.2).
2. For a detailed description of large drainage structures see page 37 of the *Forest Road Engineering Guidebook* (June 2002). For a detailed description of smaller drainage structures see pages 104 (Pipe Culverts) and 106 (Log Culverts) of the *Forest Road Engineering Guidebook* (June 2002). An electronic version of the guidebook can be accessed at:

<https://www.for.gov.bc.ca/tasb/legsregs/fpc/fpcguide/Road/FRE.pdf/fpc/fpcguide/Road/FRE.pdf>

#### 4.3.3.1 Culvert Cost Estimates

1. The costs in Table 4-3 Part A, include all costs of supplies, transporting the culvert to the jobsite and installation of the culvert to the final subgrade stage. The costs in Part B exclude the installation of the culvert to the final subgrade. No interpolation of the costs is permitted.
2. Where the use of culverts greater than or equal to 0.95 m in diameter is required in tabular subgrade construction, the cost estimates are determined from Table 4-3 Part A.



3. Where an engineering cost estimate in section 4.3.6 requires the use of culverts from 0.3 m to 1.8 m, the cost estimates are determined from Table 4-3 Part A or B.
4. Engineered cost estimates are required where a culvert larger than 1.8 m, or 20 m in length is used.

**Table 4-3: Culvert Cost Estimates**

<b>PART A: INSTALLED CULVERT COST ESTIMATE (\$)</b>														
<b>Culvert length (m)</b>	<b>Equivalent Round Diameter</b>													
	<b>0.3</b>	<b>0.4</b>	<b>0.45</b>	<b>0.5</b>	<b>0.6</b>	<b>0.7</b>	<b>0.8</b>	<b>0.9</b>	<b>0.95</b>	<b>1</b>	<b>1.2</b>	<b>1.4</b>	<b>1.6</b>	<b>1.8</b>
	<b>X-Sectional Area (m<sup>2</sup>)</b>													
	<b>0.07</b>	<b>0.13</b>	<b>0.16</b>	<b>0.2</b>	<b>0.28</b>	<b>0.38</b>	<b>0.5</b>	<b>0.64</b>	<b>0.71</b>	<b>0.79</b>	<b>1.13</b>	<b>1.54</b>	<b>2.01</b>	<b>2.54</b>
9	614	616	691	791	990	1,239	1,538	1,887	2,062	2,261	3,108	4,130	5,301	6,622
10	614	652	735	846	1,068	1,344	1,677	2,064	2,258	2,480	3,421	4,556	5,858	7,325
11	614	688	780	901	1,145	1,450	1,815	2,242	2,455	2,698	3,734	4,983	6,414	8,029
12	614	724	824	957	1,223	1,555	1,954	2,419	2,651	2,917	4,047	5,409	6,971	8,732
13	614	760	868	1,012	1,300	1,660	2,092	2,596	2,848	3,136	4,360	5,836	7,528	9,435
14	614	796	912	1,068	1,378	1,765	2,230	2,773	3,045	3,355	4,673	6,262	8,084	10,139
15	614	832	957	1,123	1,455	1,871	2,369	2,950	3,241	3,573	4,986	6,689	8,641	10,842
16	614	868	1,001	1,178	1,533	1,976	2,507	3,128	3,438	3,792	5,299	7,115	9,197	11,545
17	622	904	1,045	1,234	1,610	2,081	2,646	3,305	3,634	4,011	5,611	7,541	9,754	12,249
18	641	940	1,090	1,289	1,688	2,186	2,784	3,482	3,831	4,230	5,924	7,968	10,310	12,952
19	660	976	1,134	1,344	1,765	2,291	2,923	3,659	4,028	4,448	6,237	8,394	10,867	13,655
20	680	1,012	1,178	1,400	1,843	2,397	3,061	3,837	4,224	4,667	6,550	8,821	11,424	14,359
<b>PART B: SUPPLY AND DELIVERY ONLY (\$/m)</b>														
avg./m	31	38	43	49	61	76	94	116	126	139	191	253	325	406

#### 4.3.3.2 Bridge Cost Estimates

1. The cost estimates for single-span, single-lane, steel girder bridges from 6 m to 15 m in length with timber decks, and concrete lock block or sill foundations with 1 or 2 tiers are determined from Table 4-4. This includes reinstallation of previously used superstructures and/or concrete lock-block substructures at a new site.
2. The costs in Tables 4-4 include all costs of materials, delivery and installation (and dismantling as the case may be) to the final subgrade stage. A total installation or reinstallation cost is determined by summing the values appropriate for the situation and design.
  - a. Notwithstanding subsection (3), for the reinstallation of previously used superstructures where one or more deck module must be replaced, the individual deck module cost may be included in the cost estimate. Each deck module cost estimate is the tabular deck module amount (\$) from table 4.4 divided by the superstructure length (m) multiplied by 3.

3. Costs are not to be interpolated. For span length and abutment height use the nearest unit provided in the table. For example, a structure of 12.2 m span length, use 12.0 m. An abutment height of 0.6 m use 0.9 m.
4. Span Length (m) is the distance measured from the one end of the steel girder to the other end of girder (bridge span out-to-out).
5. Abutment Height (m) is the distance from the ground surface interface to the bottom of the girders, measured at the mid-point, before back-filling.
6. Abutment Tiers (#) is the number of rows of concrete lock blocks.

**Table 4-4: L100, L-75 and CL/BCL-625 Bridge Cost Estimates**

Superstructure Components			Span Length (m)			
			6	9	12	15
Supply of New Steel Structure		L100	10,550	13,750	17,950	22,200
		L75 or BCL-625	9,500	12,350	16,150	19,950
Supply of New Deck Modules	Untreated	L100	5,300	7,900	10,550	13,200
		L75 or BCL-625	4,950	7,450	9,950	12,400
	Treated	L100	7,600	11,400	15,200	19,000
		L75 or BCL-625	7,100	10,600	14,150	17,700
Installation of Superstructure			3,150	3,700	7,400	8,450
Supply, Installation and Removal of a Work Bridge			4,250	4,250	4,750	5,800
Dismantling and Transportation (re-usable structure)			1,600	1,600	2,650	2,650
Substructure Components (1 side only)			Abutment Height or Tiers			
			1 tier or <=0.9m		2 tiers or >0.9m	
Supply and Installation of Abutments	Sill (Log)		550		4,500	
	Lock Block	Supply (new only)	2,100		5,300	
		Install	5,300		7,900	
Dismantle and Transport of Used Concrete Blocks			1,250		2,200	
Supply and Installation of New Bearings	Cap	12x12 Treated Timber	300			
		16x16 Treated Timber	400			
		Pre-cast Concrete	3,150			
	Sill	Untreated Timber	250			
		Treated Timber	400			
		Pre-cast Concrete Pad	1,600			
		Cast-in-Place Concrete Pad	2,650			
<b>Bridge Survey &amp; Design and Certification</b>						
Survey	Site Specific		4,250			
	Standard		2,650			
Certification			Abutment Height or Tiers			
			1 tier or <=0.9m		2 tiers or >0.9m	
			1,350		2,450	

7. For sites located more than 200 km from the free-on-board site, an additional engineered cost estimate may also be included for transportation costs beyond 200 km for:
  - a. delivering the structure and materials; and
  - b. mobilization and demobilization if the equipment is not required for adjacent tabular or other ECE development projects.
8. Bridge cost estimates for types or sizes not represented in this section require a Qualified Professional Estimate, Detailed Calculation Estimate or Tendered Contract.

#### 4.3.3.3 Log Bridge Cost Estimates

The cost estimate for log bridges may be determined using the tabular log bridge methodology in the Coast Appraisal Manual effective at the time of the appraisal data submission.

#### 4.3.4 Tabular Stabilizing Material

1. Additional stabilizing material is the placement of gravel or broken rock on the road subgrade to provide stable support and a running surface for logging equipment using the road during the harvesting of tributary timber. Where stabilizing material developed during the subgrade or ditch construction is insufficient, a cost estimate for additional stabilizing material to be trucked in from selected borrow pits may be included in the appraisal.
2. The unit cost estimate (\$/km) for the additional stabilizing material includes:
  - a. borrow pit preparation,
  - b. loosening and/or pushing materials in borrow pits when required (e.g., compacted or cemented gravel, oversize material, etc.),
  - c. loading gravel trucks,
  - d. truck hauling, and
  - e. spreading and compacting the material.
3. The additional stabilization material cost estimate excludes:
  - a. rock drilling, explosives, loading of explosives and blasting in borrow pit construction.
4. The cost estimates assume borrow pits are located adjacent to the road side and are not part of the subgrade excavation. If a new road needs to be constructed to access the borrow pit, then an access road cost estimate is required in addition to the in-place unit cost estimates.
5. The cost estimate for addition of stabilizing material must be determined using the cost equations in this section unless the material is placed in conjunction with geo fabric, geo grids, corduroy or where the stabilizing material requires processing such as screening or crushing (refer to section 4.3.6 (8)(n)).

#### 4.3.4.1 Stabilizing Material Cost Equations

- For each road, the additional stabilizing material cost estimate (\$/km) is determined from the equation for the appropriate road group.

Road Groups	Equation
1	Refer to section 4.3.6(8)(q)
2	17,371
3	16,241
4	13,626
5	12,736
6	18,564
7	20,463
8	12,736
9	12,736
10	23,413
11	23,413
12	23,413

Where:

Road groups = as defined in Table 4-2.

- No cost estimate for additional stabilizing material is allowed for any snow and ice roads.

#### 4.3.5 Tabular Cattle Guards, Fencing and Pipeline Crossings

- Where the installation of cattle guards or fencing are required to mitigate the impacts resulting from harvesting on the cutting authority area, the following cost estimates apply:
  - Cattle Guards \$7,804 each
  - Remedial Fences and Wing Fences (post and wire, post and rail and/or log snake fence construction only), used to mitigate the removal of natural range barriers \$2,120 per 100 m
  - Logging Debris Fences (logging debris used to protect sensitive riparian areas within or adjacent to a cut block) \$250 per 100 m

2. For pipeline crossings, the following cost estimates apply:
  - a. Single pipe crossing \$3,038 each
  - b. Multiple pipe crossing \$3,007 per pipe  
(where 2 or more pipes are crossed within the same right-of-way)
3. The cost estimates for subsections (1) and (2) include materials, transportation and installation.

#### 4.3.6 Engineering Cost Estimates (ECE)

1. Where the tabular cost estimating procedures of this manual cannot be used due to their physical limitations, the cost of a development project must be estimated by preparing an engineering cost estimate.
2. The Director, Timber Pricing Branch may approve standardized procedures for preparing ECEs for those situations listed in subsection (8).
3. Where the non-tabular portion of the ECE development work has been carried out prior to the time of the submission of the appraisal in ECAS, the actual equipment types and hours worked, hours/or days in labour or professional services, materials and costs must be used in the ECE.
4. A reappraisal may not be used to change an ECE to a tabular cost estimate.
5. A district engineering staff member, 30 days prior to the commencement of works, must be notified of all upgrades on Forest Service Road bridges and major culverts. Where required by the district engineer, the work may require design and/or supervision by a Professional Engineer. The costs associated with the survey, design and supervision in this situation will be allowed as part of the structural maintenance ECE.
6. A development project or a portion of a project is made on the basis of either:
  - a. site-specific data using common subgrade construction variables (section 4.3.2.2), and
  - b. tabular drainage structure costs (section 4.3.3), tabular stabilizing material costs (section 4.3.4), and tabular equipment and labour rates (Appendix I) in this manual.
    - i. for costs incurred prior to the submission of an appraisal in ECAS, use the manual in effect at the time the costs were incurred.
    - ii. for costs not incurred prior to the submission of an appraisal in ECAS use the manual in effect at the time of the submission.
    - iii. for costs in a reappraisal, use the manual identified in paragraph (i) or (ii) in the original appraisal; or
  - c. the results of an arm's length competitive bid process (tendered contracts) where a contract is awarded to the lowest bidder. Closed or non-advertised tenders with limited invitations must receive a minimum of three bids.
    - i. These costs may be re-estimated in a reappraisal provided the original competitive bid included a methodology for adjusting the bid price based on more accurate site

information and re-estimation of those costs is performed in accordance with that methodology.

7. The Crown is not liable for any difference between the appraisal estimate and the licensee's actual costs.
8. The following specific situations are considered for engineering cost estimates:
  - a. New construction of long term, primary access road sections, with a finished running surface greater than 6 metres wide and agreed to by district engineering staff.
  - b. Road construction on uphill side slopes greater than 50%.
  - c. When rock percent as calculated in section 4.3.2.2(4) is greater than 50%.
  - d. Road construction within terrain class 4 and 5.
  - e. End haul construction (of roads and landings) requiring removal by truck of excavated material to a separate area to avoid side casting on steep and/or sensitive sites.
  - f. Overland construction to provide a roadbed by trucking in material for extensive filling; see page 81 of Forest Road Engineering Guidebook for a more detailed description.
  - g. Bridges (including ice bridges) not included in the subgrade construction cost estimate or represented in section 4.3.3.2 or 4.3.3.3 (tabular bridges). Eligible costs are described in section 4.3.6(9).
  - h. Structural maintenance of bridges, substructure and cribwork.
  - i. Road Reactivation activities necessary to re-open a road where there were no prior road management obligations.
  - j. Reconstruction of roads and pertinent structures required to return the subgrade or structure to the standard that existed at the time of original construction.
  - k.
    - i. Upgrade of roads and pertinent structures resulting in changes to the standard of the existing road and/or structure, including changes to the width of the running surface, horizontal and vertical realignment, additional culverts, lengthening of existing pullouts or adding additional pullouts where not required by the road standard or use of the road at the time of original construction. Blasting, or major switch back re-alignment is not restricted by the minimum 0.100 km section length requirement.
    - ii. With the intention to upgrade the road standard, a reassessment of the specified design vehicle load configuration for an existing bridge structure administered by a non-ministry authority. The submitter must receive approval of the reassessment from the non-ministry authority prior to submitting the cost estimate in an appraisal.
  - l. Placement of stabilizing material to an existing road with uninterrupted road section lengths of 0.3 km or more; regardless if the road was previously stabilized.

- m. Culverts greater than 1.8 m in diameter, or culverts greater than 20 m in length regardless of diameter. The cost estimate includes all costs of transporting the culvert to the jobsite and all costs of installation of the culvert to the final subgrade stage.
  - n. Placement of stabilizing material to a new or existing road where geo fabric, corduroy, crushed and/or screened rock/gravel is used.
  - o. Placement of portable platform(s) to be used as a structural roadway.
  - p. Retaining walls, railway crossings and other structures (such as multiple culverts, baffled culverts, arched culverts, culverts that require a “dry” installation, and other structures determined by the timber pricing co-ordinator).
  - q. New road subgrade construction and ballast cost estimates in Road Group 1 are determined using the methodology outlined in the Interior Detailed Engineering Cost Estimate Procedures.
  - r. The costs of designing and constructing a forwarding road. A forwarding road is not a trail, but a road built to a designed standard which includes stripping, grubbing, stumping and primary excavation to establish subgrade that is used for transporting crews and equipment and forwarding timber but not for hauling logs.
  - s. Rock blasting within new sections of tabular road subgrade or borrow pit construction. Blasting is not restricted by the minimum 0.100 km section length requirement.
9. Costs that may be included in the detailed engineered cost estimate are:
- a. Freight (for materials).
  - b. Provincial sales tax if applicable (for materials purchased prior to July 1, 2010 and on or after April 1, 2013).
  - c. Supervision of construction of complex structures by a professional engineer.
  - d. Bridge Costs
    - i. In addition to other costs described in this section, bridge costs may include:
      - Crib back fills to a maximum distance of 15 m on either end.
      - Site preparation.
      - Protection features such as rip rap.
      - Material and equipment supply and delivery (subject to paragraphs (ii) and (iii) in this subsection).
      - Bridge crossing assurance statement by a professional engineer either employed by the licensee or contracted. A maximum of three field visits are permitted unless otherwise approved by the regional timber pricing co-ordinator.
    - ii. Where bridge materials are re-used by the original purchaser at a different site, the bridge cost estimate may include the cost of dismantling the materials at the

- site where they were previously used, and transportation to and installation at the different site, but may not include the initial materials and delivery costs.
- iii. Where used bridge materials are purchased by the licensee from a legally non-associated party, only the cost of purchasing and transporting those materials approved by the person determining the stumpage rate may be included in the bridge cost estimate in addition to the costs listed above.
  - e. Site plans, designs and layouts.
  - f. The costs of mobilization and demobilization may be included in the ECE if the equipment is not required for adjacent tabular or other ECE development projects.
10. GST/HST and supervision costs, other than as stated above, are not to be included in the engineered estimate.
11. Where different timber volumes are used for separate cost estimates, the unit costs are rounded to the nearest cent before totalling.



## 4.4 Road Management

1. Where the licensee is obliged to carry out road management activities, the road management cost estimate includes but is not limited to, costs for the following:
  - a. all access management
  - b. all deactivation
  - c. bridge re-decking/wearing surface replacement
  - d. brushing
  - e. cattle guard cleanout
  - f. cross ditch construction
  - g. culvert removal
  - h. culvert repairs and thawing
  - i. culvert replacement (<950 mm)
  - j. ditching
  - k. dust control
  - l. grading
  - m. grass seeding
  - n. minor flood and storm damage repair
  - o. non-structural maintenance of bridges
  - p. road ripping
  - q. road use charges paid to other licensees
  - r. roadside treatments
  - s. sanding
  - t. seasonal erosion control
  - u. sign maintenance
  - v. slough removal
  - w. snowplowing and refreezing
  - x. spot gravelling (< 0.3 km distance)
  - y. water bar construction (seasonal)
2. The cost estimate for all road management carried out on logging operations depends on the geographic location of the cutting authority area (refer to Table 4-5).
3. Cutting authorities issued under forms of tenure not located administratively within a tree farm licence area or timber supply area will be assigned the road management cost estimate for the TFL or TSA/supply block in which the cutting authority is geographically located.

**Table 4-5: Road Management Cost Estimates**

RMG	TFL #	TSA	TSA #	Supply Block	\$/m <sup>3</sup>
A	1, 41	Bulkley	3	All	5.32
		Cascadia	45	9, 10, 11	
		Cassiar	4	All	
		Kalum	10	All	
		Kispiox	12	All	
		Nass	43	All	
		Pacific	44	All	
		*Lillooet	15	All	
B	48	Dawson Creek	41	All	3.85
		Fort Nelson	8	All	
		Fort St. John	40	All	
C		Mackenzie	16	All	3.70
D		Prince George	24	A, B	2.88
E		Lakes	14	All	3.61
		Morice	20	All	
F		Prince George	24	C	3.06
G		Prince George	24	D	4.74
H	5 <sup>1</sup>	Prince George	24	E, F, I	1.39
I	30, 52, 53	Prince George	24	G, H	3.92
		*Quesnel	26	E, F, G, H, I	
		*Cascadia	45	5, 6, 7, 8	
J		*Quesnel	26	A, B, C, D	2.71
K		*Williams Lake	29	A, B, C, D, E, I	2.71
L		*Williams Lake	29	K, L, M, N	3.25
		*100 Mile House	23	E, F, G, H	
M		*Williams Lake	29	F, G, H, J	2.84
		*100 Mile House	23	A, B, C, D	
N	18	Robson Valley	17	All	3.26
		*Kamloops	11	1	
O	35	*Kamloops	11	2, 3, 4	4.56
P		*Merritt	18	All	2.90
Q	8, 59	*Boundary	2	E, F	3.72
		*Okanagan	22	1, 2, 3	
R	49	*Okanagan	22	4, 5, 6, 7	4.14
S	33, 55, 56	*Golden	7	All	5.20
		*Okanagan	22	8, 9	
		*Revelstoke	27	All	
T	3, 23	*Arrow	1	All	5.25
		*Boundary	2	C, D, G	
		*Cascadia	45	1, 2, 3, 4	
U		*Kootenay Lake	13	All	2.48
V	14	*Cranbrook	5	All	2.68
		*Invermere	9	All	

<sup>1</sup> The portion of TFL 52 that was within the former TFL 5

\* Indicates TSAs in the South Area

#### 4.4.1 Road and Land Use Costs

1. Prior to a road or land use charge being included in the TOA, the licensee must:
  - a. submit a "Request for Approval of a Road Use Charge" form to the timber pricing coordinator; and
  - b. receive written approval of the road or land use charge from the regional manager.
2. Charges as a Share of Road Management
  - a. No recognition is made of such charges. The road management cost estimate in section 4.4 includes all relevant costs whether incurred directly by the licensee or by payment to another party for services performed.
3. Charges Other Than for Road Management

There are four main categories of road status:

- a. Forest Service Roads

No road use charges will be included in the TOA for a road that is declared, determined, built, maintained or modified by the provincial government.

- b. Permitted Roads

No road use charges will be included in the TOA for roads built on Crown land, authorized by road permit or other cutting authority documents. This category also includes foreshore leases, camp areas and dryland sorts.

- c. Other Roads

Road use charges for roads on Indian Reserves or on private land owned by an arm's length third party and not subject to a lease held by the licensee, their affiliate or an agent of either, may be included in the TOA provided there is no lower cost route capable of development through Crown land.

The charges recognized must be reasonable, must not exceed compensation that might be determined under forest legislation and must be proven through the presentation of auditable documents.

- d. Ministry of Transportation and Infrastructure (MOTI) Roads

Traffic control costs a licensee will incur as a condition of a MOTI junction permit may be submitted as a road use charge. The cost estimate must reflect a reasonable effort to concentrate trucks to minimize the number of days when traffic control is required.

4. Other Land Use Charges

Only non-governmental land use charges may be included in the TOA.

#### 4.4.2 Final Road Management

The Final Road Management (FRM) cost estimate is determined as follows:

1. For cruise based cutting authorities:

$$\text{FRM } (\$/\text{m}^3) = \text{RM } (\$/\text{m}^3) + \text{RU } (\$/\text{m}^3)$$

2. For scale based cutting authorities:

$$\text{IRM } (\$/\text{m}^3) = \frac{\text{RM } (\$/\text{m}^3) * [\text{TNCV } (\text{m}^3) + \text{D } (\text{m}^3)]}{\text{TNCV } (\text{m}^3)}$$

$$\text{IRU } (\$/\text{m}^3) = \frac{\text{RU } (\$/\text{m}^3) * [\text{TNCV } (\text{m}^3) + \text{D } (\text{m}^3)]}{\text{TNCV } (\text{m}^3)}$$

$$\text{FRM } (\$/\text{m}^3) = \text{IRM } (\$/\text{m}^3) + \text{IRU } (\$/\text{m}^3)$$

Where:

IRM	=	Interim Road Management cost estimate
IRU	=	Interim Road and Land Use Charges
RM	=	Road Management cost estimate from table 4-5
RU	=	Road and land use charges applicable under section 4.4.1
TNCV	=	Total Net Coniferous Volume from the cruise
D	=	Total Net Deciduous Volume from the cruise

## 4.5 Silviculture Cost Estimate (Basic and Enhanced)

1. The silviculture cost estimate includes the cost of all activities that are required to achieve a licensee's free-growing stand obligations (except root disease control) on the cutting authority area.
  - a. A silviculture cost estimate may not be included in the TOA unless:
    - i. the licensee is obligated to establish a free growing stand, and,
    - ii. the activity is not funded by another agency.
2. The area to which the silviculture cost estimate may be applied in the appraisal is the gross silviculture area (GSA). The GSA includes NMA from the cruise and any other portion of the cutting authority area not included in the NMA, where the licensee has an obligation to establish a free-growing stand.
3. Table 4-7 lists the basic and enhanced cost estimates (\$/ha) for Biogeoclimatic Ecosystem Classification (BEC) zone, subzone and variant combinations (BEC units) across the interior. Where the BEC unit is not listed in the table, the BEC undifferentiated subzone "un" cost estimate is used.
4. Where a cutting authority area includes more than one BEC unit, a prorated basic silviculture cost estimate will be determined by prorating the cost estimates from Table 4-7 for the primary and secondary BEC units identified in the appraisal data submission based on their respective % by net merchantable area identified in the appraisal data submission. Where applicable, enhanced silviculture costs will be included in the cost estimate for the primary and/or secondary BEC units. The ADS submission must indicate the percentage (by area) of the primary and secondary BEC units that are committed to enhanced silviculture standards.
5. The silviculture cost estimate is calculated as follows:

$$\begin{aligned} & \text{Silviculture } (\$/\text{m}^3) \\ & = \frac{\left[ \text{NMA} * \text{Cost} * \left( \frac{\text{CAPCUT}\%}{100} \right) * 1.25 \right] + \left[ (\text{GSA} - \text{NMA}) * \text{Cost} \right]}{(\text{ATNCV or TNCRV})^1} \end{aligned}$$

Where:

NMA = Net merchantable area (ha). This area must be the same area directly attributable to the appraised Total Net Cruise Volume for the cutting authority.

ATNCV = Adjusted Total Net Coniferous Volume (m<sup>3</sup>). Where ATNCV is the Total Net Conifer Volume adjusted by the factor in Table 4-6 by species and selling price zone (SPZ).

<sup>1</sup> For scale based CAs, use ATNCV. For cruise based CAs use TNCRV.

**Table 4-6: Cruise Adjustment Factors by Species and Selling Price Zone**

SPZ	BA	CE	FI	HE	LA	LO	SP	WH	YE
5	0.832	0.902	1.104	0.923	0.833	1.020	0.931	0.418	0.791
6	0.791	1.125	1.001	0.929	0.819	0.857	0.956	0.404	0.777
7	0.796	0.886	1.023	0.926	0.837	0.832	0.966	0.422	0.795
8	0.948	0.926	0.965	0.947	0.857	0.875	1.012	0.442	0.815
9	0.835	0.893	1.006	0.914	0.824	0.836	0.971	0.409	0.782

Cost =

$$\frac{\text{AreaB1} * (\text{BC1} + \text{E}\%1 * \text{EC1}) + \text{AreaB2} * (\text{BC2} + \text{E}\%2 * \text{EC2})}{\text{AreaB1} + \text{AreaB2}}$$

Where:

AreaB1 = Area of the primary BEC unit in hectares.

AreaB2 = Area of the secondary BEC unit in hectares.

BC1 = Basic cost estimate for the primary BEC unit.

BC2 = Basic cost estimate for the secondary BEC unit.

E%1 = % of primary BEC committed to enhanced silviculture standards.

E%2 = % of secondary BEC committed to enhanced silviculture standards.

EC1 = Enhanced cost estimate for the primary BEC unit.

EC2 = Enhanced cost estimate for the secondary BEC unit.

GSA = Gross silviculture area (ha) within the cutting authority area for which the licensee has free-growing obligations and has not yet received a basic silviculture cost estimate in any appraisal. For the purpose of this section the GSA cannot be less than the NMA and includes any pre-harvested areas outside the NMA of a fully appraised cutting permit where the licensee is responsible for silviculture.

TNCRV = Total Net Cruise Volume (m<sup>3</sup>).

PCUT = Partial cutting includes all forms of harvesting, other than clear cutting.

Clear cutting is defined as those areas with block opening sizes equal to or greater than 1 hectare and where the volume removal is equal to or greater than 90% based on the net volume measured to the Interior Standard Timber Merchantability Specifications (section 1.5).

Partial cut areas that have less than 90% volume removal are not to be averaged with those areas that are equal to or greater than 90%. Clear cut areas are to be stratified out before calculating an overall weighted partial cut percent for the cutting authority.

Where a partial cut is comprised of openings of less than 1 hectare in size, the PCUT percent is based on the cumulative volume of these openings divided by the volume of the block area surrounding them.

$$\text{PCUT} = \frac{\text{Total Net Cruise Volume required to be removed using a partial cut system}}{\text{Total Net Cruise Volume on the area where Partial Cutting is required}} * 100$$

(except if partial cut percent  $\geq 90\%$ , then PCUT = 0)

CAPCUT = Cutting Authority (CA) partial cut %. If CAPCUT%  $> 80\%$   
CAPCUT% = 80, otherwise:

$$\text{CAPCUT\%} = (\text{CA TNCRV} / \text{CA Gross TNCRV}) * 100$$

$$\text{CA Gross TNCRV (m}^3\text{)} = v\text{GS(C)} + (v\text{GS(P)} / \text{GS(PCUT/100)}) + v\text{OC(C)} + (v\text{OC(P)} / \text{OC(PCUT/100)}) + v\text{SK(C)} + v\text{Horse(C)} + v\text{Heli(C)} + (v\text{Heli(P)} / \text{Heli(PCUT/100)})$$

Where:

PCUT	=	Logging method PCUT (%)
CAPCUT	=	Cutting Authority (CA) partial cut percent
V	=	Harvest Method Volume (m <sup>3</sup> ) required to be logged by each system
Heli (C)	=	helicopter logging (clear cut)
Heli (P)	=	helicopter logging (partial cut)
Horse (C)	=	horse logging (clear cut)
GS (C)	=	ground skidding (clear cut)
GS (P)	=	ground skidding (partial cut)
OC (C)	=	overhead cable logging (clear cut)
OC (P)	=	overhead cable logging (partial cut)
SK (C)	=	skyline logging (clear cut)

#### 4.5.1 Enhanced Silviculture

1. Costs for enhanced silviculture may be included in the calculation of the silviculture cost estimate for BEC units with an enhanced silviculture cost estimate in Table 4-7.
2. To qualify for the enhanced silviculture cost estimate, a management unit plan that includes management objectives and the associated silviculture regimes required to achieve those objectives must be in place and endorsed by the District Manager. There are a number of ways the endorsed management unit plan requirement can be satisfied:

- a. District Manager endorsed Type 4 or Integrated Silviculture Strategies that include (or have been revised to include) increased establishment densities.
  - b. Approved TFL Management plans that include increased establishment densities in the timber supply assumptions.
  - c. District Manager endorsed silviculture strategies or stocking standards.
  - d. District Manager endorsed forest health strategies.
3. To qualify for the enhanced silviculture cost estimate, the cutting authority area must be included in a Forest Stewardship Plan (FSP) that contains enhanced stocking standards. Enhanced stocking standards must specify the minimum planting density to be achieved at regeneration date for each applicable BEC unit.
  4. Management unit plans must include regeneration dates that are reflective of artificial regeneration, and a high minimum density of planted seedlings. The enhanced silviculture cost does not apply where natural regeneration or direct seeding is used to restock the harvest area.
  5. Refer to Appendix V for a list of enhanced silviculture regimes.

#### 4.5.2 Root Disease Control

1. The costs for root disease control may only be included in the calculation of the TOA when the treatment is based on a field assessment and signed by a qualified professional.
2. For each cutting authority, the root disease control cost estimate is determined as follows:
  - a. Treatment Area Cost per Hectare
 
$$= 734.48 + (10.79 * \text{SLOPE}) + (1.004 * \text{SPH})$$
  - b. Treatment Area Cost Estimate (\$) = Treatment Area Cost per Hectare \* AREA
  - c. Total Treatment Cost Estimate (\$) =  $\Sigma$  (Treatment Area Cost Estimate (\$))

Where:

SLOPE is the average slope from the cruise compilation. The block average or slope summary that best reflects the treatment area must be used.

SPH is the total stems per ha (including dead potential and dead useless) greater than or equal to the 40 cm DBH class from the cruise compilation (after leave tree reductions). The type summary report must be used.

AREA is the number of hectares in a treatment area.

3. If the equation in subsection (2)(a) yields less than \$932/ha, then use \$932/ha. If the equation yields more than \$1,575/ha, then use \$1,575/ha.



### 4.5.3 Total Silviculture Cost Estimate

Total Silviculture (\$/m<sup>3</sup>) =

$$\text{Silviculture (\$/m}^3\text{)} + \frac{\text{Root Disease Control (\$)}}{\text{ATNCV or TNCRV (m}^3\text{)}^1}$$

**Table 4-7: BEC Silviculture Cost Estimates**

The dollar per hectare (\$/ha) cost estimates are net of overhead.

BEC Unit	Basic \$/ha	Enhanced \$/ha	BEC Unit	Basic \$/ha	Enhanced \$/ha
BWBS	1,195	-	ESSFwc4	1,628	-
BWBSdk	1,182	-	ESSFwcv	1,444	-
BWBSmk	1,230	-	ESSFwh1	1,589	-
BWBSmw	957	-	ESSFwh2	1,966	-
BWBSvk	1,366	-	ESSFwh3	1,528	-
BWBSwk1	1,074	-	ESSFwk1	1,657	354
BWBSwk2	1,341	-	ESSFwk2	1,323	-
BWBSwk3	1,158	-	ESSFwm1	1,124	-
CWH	637	-	ESSFwm2	1,406	-
CWHds1	689	-	ESSFwm3	1,279	-
CWHms1	576	-	ESSFwm4	1,096	-
CWHvm1	847	-	ESSFwv	1,908	-
CWHvm2	601	-	ESSFxc1	1,269	335
CWHws1	560	-	ESSFxc2	1,327	335
CWHws2	548	-	ESSFxc3	1,246	-
ESSF	1,308	-	ESSFxcv1	1,185	-
ESSFdc1	1,382	-	ESSFxcv2	547	-
ESSFdc2	1,239	415	ICH	1,683	-
ESSFdc3	1,458	-	ICHdk	1,398	-
ESSFdk1	1,056	-	ICHdm	1,111	-
ESSFdk2	1,074	-	ICHdw1	2,270	-
ESSFdv1	768	-	ICHdw3	1,551	-
ESSFdv2	1,547	-	ICHdw4	1,921	-
ESSFmc	917	227	ICHmc1	1,298	-
ESSFmh	1,176	-	ICHmc2	1,310	-
ESSFmk	1,536	221	ICHmk1	1,289	-
ESSFmm1	1,568	-	ICHmk2	1,491	-
ESSFmm2	1,366	-	ICHmk3	1,202	124
ESSFmm3	1,068	-	ICHmk4	1,084	-
ESSFmv1	705	323	ICHmk5	1,717	-
ESSFmv2	894	-	ICHmm	1,761	-
ESSFmv3	1,038	236	ICHmw1	1,796	-
ESSFmv4	911	-	ICHmw2	1,758	-
ESSFmw1	924	245	ICHmw3	1,430	-
ESSFmw2	1,012	-	ICHmw4	1,869	-
ESSFvc	3,170	-	ICHmw5	1,507	-
ESSFwc2	1,564	-	ICHvc	2,307	-
ESSFwc3	1,622	260	ICHvk1	3,211	-

<sup>1</sup> For scale based CAs, use ATNCV. For cruise based CAs use TNCRV.

BEC Unit	Basic \$/ha	Enhanced \$/ha
ICHvk2	2,229	28
ICHwc	1,426	-
ICHwk1	1,964	-
ICHwk2	1,428	239
ICHwk3	1,907	203
ICHwk4	1,357	121
ICHxw	1,838	-
IDF	1,234	-
IDFdc	1,261	-
IDFdk1	1,277	511
		872**
IDFdk2	1,433	598
IDFdk3	943	1,093**
IDFdk4	663	1,471**
IDFdk5	981	-
IDFdm1	1,461	-
IDFdm2	1,091	-
IDFdw	1,234	-
IDFmw1	1,321	-
IDFmw2	1,609	-
IDFww	1,234	-
IDFww1	1,234	-
IDFxc	1,131	-
IDFxh1	1,225	214
IDFxh2	1,551	552
		718**
IDFxh4	1,456	-
IDFvk	1,131	-
IDFxm	1,190	934**
IDFxw	1,387	-
IDFxx2	1,234	-
MH	500	-
MHmm1	500	-
MHmm2	500	-
MS	1,044	-
MSdc1	1,170	-
MSdc2	1,194	-
MSdc3	1,267	-
MSdk	1,111	-
MSdm1	1,318	-
MSdm2	1,095	-
MSdm3	1,091	-
MSdv	1,139	-
MSdw	1,067	-
MSmw1	1,006	-
MSmw2	1,006	-
MSxk1	979	362
MSxk2	991	412
		1,170**
MSxk3	915	-

BEC Unit	Basic \$/ha	Enhanced \$/ha
MSxv	326	-
PP	1,509	-
PPxh1	1,509	-
PPxh2	1,509	-
PPxh3	1,509	-
SBPS	587	-
SBPSdc	646	340
SBPSmc	642	-
SBPSmk	763	414
SBPSxc	299	-
SBS	1,255	-
SBSdh1	1,464	-
SBSdh2	1,610	-
SBSdk	1,034	205
SBSdw1	1,113	597
SBSdw2	998	476
SBSdw3	997	233
SBSmc1	1,014	222
SBSmc2	910	429
SBSmc3	701	340
SBSmh	1,816	236
SBSmk	1,144	-
SBSmk1	1,067	243
SBSmk2	1,841	-
SBSmm	1,086	-
SBSmw	1,537	400
SBSvk	1,632	295
SBSwk1	1,337	232
SBSwk2	1,305	-
SBSwk3	1,237	225
SWB	1,048	-
SWBmks	1,048	-
SWBvk	1,048	-
SWBvks	1,048	-
*BWBSdk1	1,193	-
*BWBSdk2	1,182	-
*BWBSmw1	689	-
*BWBSmw2	1,778	-
*ESSFdk	1,059	-
*ESSFdm	1,195	-
*ESSFdv	1,398	-
*ESSFmw	924	-
*ESSFvv	1,788	-
*ESSFwc1	1,856	-
*ESSFwm	1,124	-
*ESSFxc	1,246	-
*ICHdw	1,911	-
*ICHdw2	1,464	-
*IDFdk	1,092	-

BEC Unit	Basic \$/ha	Enhanced \$/ha
*MSdk1	1,111	-
*MSxk	957	-
*PPdh1	1,509	-

BEC Unit	Basic \$/ha	Enhanced \$/ha
*PPdh2	1,509	-
*SWBdk	1,048	-
*SWBdks	1,048	-

\* Indicates BEC units that have expired and are not to be included in appraisals submitted after October 31, 2018. Reference applicable Land Management Handbook crosswalk tables where necessary.

\*\* Indicates 2017 Wildfire Enhanced Silviculture Plan

## **4.6 Low Grade Percent Adjustment**

1. The POA low-grade percent adjustment by timber species as shown in Tables 4-8 and 4-9 must be used in the calculation of the specified operations and tenure obligation adjustment to account for the timber that is priced at the statutory rate.
2. The low-grade percent adjustment for each timber species to be used in the appraisal or reappraisal of the cutting authority area must be the percent adjustment by timber species by the POA to which the cutting authority area is appraised. Where the Total Net Coniferous Volume of timber on the cutting authority area is comprised of 35% or greater red and grey Mountain Pine Beetle (MPB) attacked Lodgepole pine, the adjustment from Table 4-9 is used. For cutting authorities with less than 35% red and grey MPB attacked Lodgepole pine, the adjustment is used from Table 4-8.
3. The low-grade percent adjustment to be used in the calculation of the specified operations and tenure obligation adjustment for a cutting authority area being appraised or reappraised is the sum of the products of the net coniferous cruise volume of each timber species in the cutting authority area multiplied by the low-grade percent adjustment for that species, divided by the Total Net Coniferous Volume on the cutting authority area.
4. The low-grade percent adjustment does not apply to cruise based cutting authorities.

**Table 4-8: Point of Appraisal (POA) Low Grade Percent Adjustment  
(Less than 35% R&G MPB Damage)**

POA	BA	CE	FI	HE	LA	LO	SP	WH	YE
100 Mile	0.3930	0.3157	0.1386	0.2103	0.1537	0.5321	0.1320	0.8683	0.4003
Adams Lake	0.3326	0.1788	0.0778	0.2876	0.1592	0.6291	0.1253	0.3897	0.4023
Armstrong	0.4991	0.2708	0.1041	0.3377	0.1174	0.5207	0.1802	0.3681	0.4023
Bear Lake	0.3955	0.6485	0.1258	0.7237	0.1537	0.8075	0.2524	0.5498	0.4003
Burns Lake	0.3857	0.6485	0.1521	0.7480	0.1537	0.6771	0.1782	0.5498	0.4003
Castlegar	0.4573	0.2093	0.0869	0.2015	0.0985	0.2714	0.1538	0.6005	0.4023
Chasm	0.2720	0.2550	0.2979	0.2144	0.1537	0.3136	0.2103	0.9104	0.4003
Chetwynd	0.3153	0.2757	0.1447	0.3807	0.1537	0.3414	0.1461	0.5498	0.4003
Creston	0.3039	0.1553	0.1266	0.1127	0.1295	0.2814	0.1605	0.5236	0.4023
Elko	0.3466	0.2828	0.1623	0.3248	0.1404	0.2378	0.1480	0.5236	0.4023
Engen	0.4497	0.6485	0.1521	0.7480	0.1537	0.7649	0.2650	0.5498	0.4003
Fort St. James	0.4091	0.6485	0.1521	0.7480	0.1537	0.7286	0.1987	0.5498	0.4003
Fort St. John	0.4129	0.2757	0.1447	0.3807	0.1537	0.3592	0.1545	0.5498	0.4003
Fraser Lake	0.3537	0.6485	0.1521	0.7480	0.1537	0.7310	0.1984	0.5498	0.4003
Galloway	0.3798	0.1851	0.1752	0.3134	0.1784	0.2306	0.1552	0.5236	0.4023
Grand Forks	0.3435	0.2426	0.1349	0.2271	0.1516	0.3450	0.1067	0.5236	0.4023
Houston	0.4487	0.6485	0.1521	0.7480	0.1537	0.6498	0.2900	0.5498	0.4003
Isle Pierre	0.4200	0.7219	0.2236	0.7673	0.1537	0.7337	0.1681	0.5498	0.4003
Kelowna	0.4225	0.1945	0.0994	0.2496	0.1132	0.4035	0.1488	0.5236	0.4023
Lavington	0.3865	0.2518	0.1198	0.2793	0.1581	0.5423	0.1664	0.5518	0.4023
Mackenzie	0.3686	0.6485	0.6364	0.7480	0.1537	0.6996	0.2234	0.5498	0.4003
Merritt	0.3906	0.2828	0.1683	0.3248	0.1535	0.4199	0.1873	0.8651	0.4023
Midway	0.4101	0.3247	0.1466	0.3248	0.1691	0.2930	0.1053	0.5236	0.4023
Prince George	0.4200	0.7219	0.2236	0.7673	0.1537	0.7337	0.1681	0.5498	0.4003
Princeton	0.3853	0.2828	0.2039	0.3248	0.1535	0.2411	0.1734	0.5236	0.4023
Quesnel	0.4490	0.5514	0.1368	0.7480	0.1537	0.8214	0.1760	0.5498	0.4003
Radium	0.3315	0.2364	0.0893	0.3233	0.1951	0.2730	0.1377	0.5236	0.4023
Revelstoke	0.4051	0.4011	0.0612	0.4651	0.1786	0.3578	0.1228	0.6103	0.4023
Smithers	0.3652	0.6485	0.1521	0.7480	0.1537	0.3901	0.1905	0.5498	0.4003
Strathnaver	0.4004	0.6485	0.1224	0.7480	0.1537	0.8241	0.2016	0.5498	0.4003
Terrace	0.2780	0.2050	0.1447	0.3970	0.1537	0.2598	0.1178	0.5498	0.4003
Thrms	0.4047	0.2262	0.1127	0.1938	0.1729	0.3558	0.2087	0.6091	0.4023
Vanderhoof	0.4497	0.6485	0.1521	0.7480	0.1537	0.7649	0.2650	0.5498	0.4003
Vavenby	0.3582	0.3932	0.0773	0.3983	0.1535	0.6899	0.1487	0.5692	0.4023
Westbank	0.3862	0.2828	0.1204	0.3248	0.1137	0.4157	0.1202	0.5236	0.4023
Williams Lake	0.3055	0.2375	0.2004	0.2177	0.1537	0.4148	0.1186	0.8683	0.4003
Ymir	0.4044	0.1860	0.1766	0.1803	0.1374	0.5009	0.1461	0.5236	0.4023

**Table 4-9: Point of Appraisal (POA) Low Grade Percent Adjustment (With 35% or more R&G MPB Damage)**

POA	BA	CE	FI	HE	LA	LO	SP	WH	YE
100 Mile	0.3766	0.1791	0.1062	0.2233	0.5769	0.6858	0.1550	0.3226	0.8364
Adams Lake	0.2740	0.6669	0.0201	0.1025	0.0647	0.4296	0.0630	0.5172	0.8364
Armstrong	0.3908	0.4081	0.0694	0.1025	0.0647	0.3198	0.0885	0.5507	0.8364
Bear Lake	0.3257	0.2123	0.1064	0.2235	0.1941	0.8582	0.1850	0.0043	0.8364
Burns Lake	0.2644	0.2123	0.0710	0.2235	0.1941	0.6669	0.1670	0.0043	0.8364
Castlegar	0.2782	0.1884	0.0553	0.1014	0.0503	0.4966	0.0921	0.1825	0.8364
Chasm	0.2719	0.1791	0.0900	0.2233	0.5769	0.6669	0.1434	0.3226	0.8364
Chetwynd	0.2180	0.4030	0.0762	0.1417	0.1679	0.2517	0.0761	0.5183	0.8364
Creston	0.2782	0.1884	0.0553	0.1014	0.0503	0.4966	0.0921	0.1825	0.8364
Elko	0.2782	0.1884	0.0553	0.1014	0.0503	0.4966	0.0921	0.1825	0.8364
Engen	0.3275	0.2123	0.0710	0.2235	0.1941	0.7778	0.2003	0.0043	0.8364
Fort St. James	0.2986	0.2123	0.0648	0.2235	0.1941	0.6793	0.1669	0.0043	0.8364
Fort St. John	0.2180	0.4030	0.0762	0.1417	0.1679	0.2517	0.0761	0.5183	0.8364
Fraser Lake	0.1684	0.2123	0.0710	0.2235	0.1941	0.8193	0.1666	0.0043	0.8364
Galloway	0.2782	0.1884	0.0553	0.1014	0.0503	0.4966	0.0921	0.1825	0.8364
Grand Forks	0.2782	0.1884	0.0553	0.1014	0.0503	0.4966	0.0921	0.1825	0.8364
Houston	0.2876	0.2123	0.0710	0.2235	0.1941	0.6828	0.2106	0.0043	0.8364
Isle Pierre	0.3534	0.2123	0.0880	0.2235	0.1941	0.8172	0.2109	0.0043	0.8364
Kelowna	0.2589	0.4081	0.0710	0.1025	0.0647	0.3852	0.0738	0.5507	0.8364
Lavington	0.3908	0.4081	0.0694	0.1025	0.0647	0.3198	0.0885	0.5507	0.8364
Mackenzie	0.2668	0.2123	0.0710	0.2235	0.1941	0.6467	0.1588	0.0043	0.8364
Merritt	0.2173	0.4081	0.0853	0.1025	0.0647	0.3557	0.0883	0.5507	0.8660
Midway	0.2782	0.1884	0.0553	0.1014	0.0503	0.4966	0.0921	0.1825	0.8364
Prince George	0.3515	0.2123	0.0780	0.2235	0.1941	0.8105	0.2052	0.0043	0.8364
Princeton	0.2729	0.4081	0.0529	0.1025	0.0486	0.3661	0.1475	0.5507	0.8364
Quesnel	0.1964	0.2123	0.0705	0.2235	0.1941	0.6129	0.1250	0.0043	0.8364
Radium	0.2782	0.1884	0.0553	0.1014	0.0503	0.4966	0.0921	0.1825	0.8364
Revelstoke	0.2782	0.1884	0.0553	0.1014	0.0503	0.4966	0.0921	0.1825	0.8364
Smithers	0.2876	0.2123	0.0710	0.2235	0.1941	0.6828	0.2106	0.0043	0.8364
Strathnaver	0.3105	0.2123	0.0363	0.2235	0.1941	0.7423	0.1325	0.0043	0.8364
Terrace	0.2876	0.2123	0.0710	0.2235	0.1941	0.6828	0.2106	0.0043	0.8364
Thrusms	0.2782	0.1884	0.0553	0.1014	0.0503	0.4966	0.0921	0.1825	0.8364
Vanderhoof	0.2900	0.2123	0.0154	0.2235	0.1941	0.7683	0.1852	0.0043	0.8364
Vavenby	0.2782	0.1884	0.0553	0.1014	0.0503	0.4966	0.0921	0.1825	0.8364
Westbank	0.2589	0.4081	0.0710	0.1025	0.0647	0.3852	0.0738	0.5507	0.8364
Williams Lake	0.2998	0.1791	0.0967	0.2681	0.7827	0.5856	0.1046	0.3226	0.8364
Ymir	0.2782	0.1884	0.0553	0.1014	0.0503	0.4966	0.0921	0.1825	0.8364

## 4.7 Final Tenure Obligation Adjustment

1. The tenure obligation adjustment is used in the determination of the stumpage rate for a cutting authority other than a timber sale licence entered into under section 20 of the *Act*.
2. The final tenure obligation adjustment (FTOA) is calculated as follows:

$$FTOA = \left[ \frac{TTOA}{1 - LG} \right] \times RFM - MLC$$

$$TTOA = (FFMA + DC + FRM + TS) \times \left[ \frac{CPI}{ACPI} \right]$$

Where:

- TTOA = Total Tenure Obligation Adjustment (\$/m<sup>3</sup>)
- FFMA = Final Forest Management Administration cost (\$/m<sup>3</sup>)
- DC = Total Development cost (\$/m<sup>3</sup>)
- FRM = Final Road Management cost (\$/m<sup>3</sup>)
- TS = Total Silviculture cost (\$/m<sup>3</sup>)
- LG = Low Grade percent adjustment  
(for cruise based cutting authorities, LG =0)
- RFM = Return to Forest Management Factor = 1.046
- MLC = Market Logger Cost (\$/m<sup>3</sup>)  
= [(MLDC / 1-LG) + MLSO] x [CPI / ACPI]

Where

MLDC= \$1.60/m<sup>3</sup> (the average market logger development cost for the auction dataset)

MLSO= \$0.07/m<sup>3</sup> (the average market logger specified operation cost from the auction dataset)

- CPI = Monthly BC Consumer Price Index (see section 3.2.1)
- ACPI = 153.1 (the average CPI for the cost base (2018/19))





## **5 Stumpage Rate Determination**

---

## 5.1 Stumpage Rate Determination for a Cutting Authority Entered into Under a BCTS Licence

1. An upset can either be an upset rate (\$/m<sup>3</sup>) or an upset value (\$).
2. An upset rate or determination of an upset value must not be lower than \$0.25/m<sup>3</sup>.
3. An MPS Indicated Upset (IU) must be determined by the regional revenue staff using data from a full appraisal; where

$$\text{IU} = \text{FEWB} \times (1 - \text{DF})$$

$$\text{FEWB} = \text{Final Estimated Winning Bid from section 3.4}$$

$$\text{DF} = 0.30 \text{ (Discount Factor)}$$

4. A cutting authority must be scale-based unless it meets the criteria for a cruise-based cutting authority in section 6.9 or the Executive Director, BCTS has approved cruise-based under section 106 of the *Act*.
5. All upsets are fixed for the term and all extensions except where a reappraisal is completed under section 2.2.3 (suddenly and severely damaged timber) or section 2.2.4 (minister's direction).

### 5.1.1 Upset Stumpage Rates (Upset)

1. Except as otherwise provided in this section, the upset must be the greater of either the **MPS indicated upset (IU)** or, the timber sales manager's calculated cost to prepare the timber for sale (i.e. the variable cost upset or 'VCU'); unless the upset is approved by the Executive Director, BCTS.
  - a. If applications for a timber sale license are invited but none are received, the timber sales manager may request a new upset with the purpose to **re-advertise** the timber sale license. The new upset must be greater than or equal to the VCU; unless the upset is approved by the Executive Director, BCTS.
  - b. Where the timber sale is scale-based for billing, the total upset and bonus applies to coniferous sawlog grades (grades 1 and 2).
  - c. Where the timber sale is cruise-based for billing, the total upset and bonus applies to the Total Net Cruise Volume.
2. For **decked timber or partially harvested timber sales**, the upset is the rate or value requested by the timber sales manager.
  - a. Where the timber sale is scale-based for billing, the total upset and bonus applies to coniferous sawlog grades (grades 1 and 2).
  - b. If the timber sales manager intends to sell the timber competitively as a lump sum,
    - i. the volume used to determine the upset value must be determined by an authorised scaler using a method approved by the minister, and

- ii. the total upset and bonus applies to the entire volume of decked or partially harvested timber.
3. For **salvage timber sales** (see section 6.4.3 or 6.4.4), the upset is the rate calculated under that section multiplied by the discount factor 0.30.
  - a. For cruise-based salvage timber sales, the total upset and bonus applies to the total net merchantable volume.
  - b. For blanket salvage timber sales, the total upset and bonus applies to coniferous sawlog grades (grades 1 and 2).
4. For **deciduous timber sales**, where the Total Net Deciduous Volume to be harvested is equal to or greater than sixty percent of the Total Net Cruise Volume, the upset for coniferous and deciduous timber is the upset determined under subsection (1) or (1)(a).
  - a. Where the timber sale is scale-based for billing, the total upset and bonus applies to coniferous and **deciduous sawlogs** (grades 1 and 2).
  - b. Where the timber sale is cruise-based for billing, the total upset and bonus applies to the Total Net Cruise Volume.
5. For **post-harvest material timber sales**, issued for the specific purpose of manufacturing special forest products, the upset rate is the special forest product reserve stumpage rate from Table 6-7.
  - a. The total upset and bonus applies to the total scaled product volume.

## 5.2 Stumpage Rate Determination for a non-BCTS, Fully Appraised Cutting Authority

Sections 5.2.1 through 5.2.3 are the policies and procedures for determining a stumpage rate for a cutting authority other than a cutting authority entered into under a BCTS licence or a cutting authority for which a stumpage rate is determined under chapter 6.

### 5.2.1 Indicated Rate (IR)

1. The IR is the difference between the final estimated winning bid (FEWB) calculated for the cutting authority under section 3.4 and the tenure obligation adjustment (TOA) calculated under section 4.7.
2. Expressed as an equation:

$$IR = FEWB - FTOA$$

### 5.2.2 Reserve Stumpage

The reserve stumpage for a cutting authority is determined by selecting:

1. The greater of:
  - a. the indicated rate, or
  - b. the minimum stumpage rate.
2. The greater of:
  - a. the upset stumpage rate or value, or
  - b. the minimum stumpage rate or equivalent value.

### 5.2.3 Stumpage Rate

1. Unless otherwise provided in subsection 2 of this section, the total stumpage is the sum of the reserve stumpage plus any administration and silviculture levies which may apply under section 5.3.
2. If the cutting authority is awarded on the basis of competition, the total stumpage is:
  - a. the sum of the reserve stumpage plus the bonus bid, or
  - b. the sum of the reserve stumpage plus the bonus offer.

### **5.3 Levies (Silviculture, Development, Administration)**

1. Where the Crown is responsible for basic silviculture on a cutting authority, a silviculture levy may be added to the stumpage rate or the reserve stumpage rate for any or all species and grades.
2. The levy is equal to the district manager's or timber sales manager's cost estimate of silviculture costs to be incurred by the Crown.
3. Development/Administration Levy
  - a. A development levy may be added to the reserve stumpage rate. The development levy is equal to the appraisal cost estimate of road construction provided by the Crown as approved by the regional manager.
  - b. An administration levy may be added to the reserve stumpage rate. The administration levy is equal to the district manager's cost estimate of administration provided by the Crown for preparing a Forestry Licence to Cut for salvage timber. An administration cost estimate is made for every cutting authority where the district office has to prepare all details of a Forestry Licence to Cut for salvage. No levy is applicable to professional applications.
4. The amount of any levy may be re-determined at reappraisal only.



## **6 Miscellaneous Policies**

---

## 6.1 Coniferous Average Sawlog Stumpage Rates by Forest Zone and Species

- Each of the following forest zones referred to in Tables 6-1, 6-2, 6-4, 6-4a, 6-5 and 6-6 is made up of the following forest districts and or geographic units:
  - North Central Zone - Mackenzie, Nadina, Prince George (less Robson Valley TSA), Quesnel and Stuart Nechako
  - North East Zone - Fort Nelson and Peace
  - North West Zone - Coast Mountain (excluding that portion that lies geographically within the North Coast Timber Supply Area), Skeena Stikine
  - South Central Zone - Williams Lake TSA Blocks A, B, C, D, E & I
  - South East Zone - Okanagan Shuswap, Rocky Mountain, Selkirk, and Thompson Rivers (plus Robson Valley TSA)
  - South West Zone - 100 Mile House, Cascades, and Williams Lake TSA Blocks F, G, H, and J to N
- Each of the following species referred to in Tables 6-1, 6-2, 6-4, 6-4a and 6-5 is as follows:
  - BA - Balsam
  - CE - Western redcedar
  - FI - Interior Douglas-fir
  - HE - Hemlock
  - LA - Larch
  - LO - Lodgepole pine
  - SP - Spruce
  - WH - White pine
  - YE - Yellow pine
  - AVG - Average of all species
- Where a species of coniferous timber is not listed in Table 6-1, 6-2, 6-4, 6-4a and 6-5, the average rate for the zone (AVG) must be used for that species of timber.

**Table 6-1: Coniferous Average Sawlog Stumpage Rates in \$/m<sup>3</sup>**

FOREST ZONE	BA	CE	FI	HE	LA	LO	SP	WH	YE	AVG
North Central	53.37		69.90	34.93		50.79	57.31			55.25
North East (Fort Nelson)	50.65					49.92	49.73			49.87
	30.97					30.70	34.41			33.92
North West	23.55	12.68		8.52		44.13	40.03			21.74
South Central	40.74		44.08			39.99	51.20			43.32
South East	55.48	48.52	59.36	40.86	59.16	57.69	57.65	48.05	58.25	55.22
South West	71.99	74.68	64.69	67.33	59.16	68.27	76.27	74.57		69.57



### 6.1.1 Community Forest Agreements

1. The sawlog stumpage rate for each species of coniferous timber harvested under any cutting authority issued under a Community Forest Agreement is the rate prescribed in Table 6-2 for the forest zone in which the cutting authority area is located.
2. Section 1.4.2, sections 6.1.2 through 6.5, commercial thinning in section 6.6, and sections 6.7 through 6.9 do not apply to Community Forest Agreement cutting authorities.
3. The stumpage rate determined under this section is redetermined on August 1 of each year in accordance with this section.
4. Notwithstanding subsection (1), (2), and (3), when a cutting authority is issued for the specific purpose to include projects funded by the Forest Enhancement Society of BC, the stumpage rate must be determined through a full appraisal (“fully appraised”). Refer to section 6.11 for details regarding cutting authorities with FESBC funding.

### 6.1.2 Woodlot Licences

1. Except as provided in subsection (2) and (8) of this section, the sawlog stumpage rate for each species of coniferous timber harvested under a cutting permit issued for a woodlot licence with an effective date after November 30, 2008 is the rate prescribed in Table 6-2 for the forest zone in which the cutting authority area is located.
2. Where a woodlot licence cutting permit has been issued with an effective date after November 30, 2008 for the purpose of using amounts from an eligible extended road amortization agreement in an appraisal, then the stumpage rate will be determined using the procedures in this manual excluding this section.
3. Except as provided in subsection (4) of this section, the sawlog stumpage rate for coniferous timber harvested under a road permit issued for a woodlot licence is the rate prescribed in Table 6-2 for the forest zone in which the timber mark applies.
4. Where a woodlot has an eligible extended road amortization agreement before December 1, 2008 the sawlog stumpage rate for a road permit with an effective date on or after December 1, 2008 is calculated using the procedures in section 6.3.
5. The sawlog stumpage rate for each species of coniferous timber harvested under a blanket salvage cutting authority issued for a woodlot licence is the rate prescribed in Table 6-2 for the forest zone in which the blanket salvage cutting authority applies.
6. The stumpage rate determined under subsections (1), (3) and (5) of this section is redetermined on August 1, each year in accordance with this section.
7. Except as provided in subsections (2) and (4) of this section, sections 1.4.2, 6.1.1, 6.1.3 through 6.5, commercial thinning and Pre-harvest Waste Assessment in section 6.6, and sections 6.7 through 6.9 do not apply to Woodlot Licence cutting authorities.

8. Notwithstanding subsection (1) through (7), when a cutting authority is issued for the specific purpose to include projects funded by the Forest Enhancement Society of BC, the stumpage rate must be determined through a full appraisal (“fully appraised”). Refer to section 6.11 for details regarding cutting authorities with FESBC funding.

**Table 6-2: Community Forest Agreements and Woodlot Licences: Coniferous Average Sawlog Stumpage Rates in \$/m<sup>3</sup>**

FOREST ZONE	BA	CE	FI	HE	LA	LO	SP	WH	YE	AVG
North Central	8.01		10.48	5.24		7.62	8.60			8.29
North East	7.60					7.49	7.46			7.48
(Fort Nelson)	4.65					4.60	5.16			5.09
North West	3.53	1.90		1.28		6.62	6.00			3.26
South Central	6.11		6.61			6.00	7.68			6.50
South East	8.32	7.28	8.90	6.13	8.87	8.65	8.65	7.21	8.74	8.28
South West	10.80	11.20	9.70	10.10	8.87	10.24	11.44	11.19		10.44

### 6.1.3 Incidental Conifer in Deciduous Leading Stands

1. Except as provided in section 5.1.1(4), this section applies to coniferous timber in a cutting authority area where the total estimated volume of all deciduous species to be harvested is greater than 70% of the total estimated volume of all species to be harvested.
2.
  - a. The stumpage rate for coniferous timber is the rate prescribed in Table 6-3 for the smaller of the area of the forest district/district portion, timber supply area, region, or Area in which the entire cutting authority area for the tenure is located.
  - b. Where the Crown is responsible for basic silviculture on the cutting authority area, the stumpage rate for each species of coniferous timber must be the sum of the rate determined under paragraph (a) of this subsection and the silviculture levy determined under section 5.3.
3. A stumpage rate determined under subsection 2 must be redetermined on June 1, of each year in accordance with this section.
4. Notwithstanding subsection (2) in this section, the stumpage rate may be determined through a full appraisal in accordance with chapters 1, 2, 3, 4, and 5.
5.
  - a. In this section the area of a forest district or the area of a timber supply area does not include the area of a park located within that district or timber supply area.
  - b. In this section the area of a Tree Farm Licence will be included in the area of the district or timber supply area in which it is geographically located.

## 6.2 Cutting Authorities With 5000 m<sup>3</sup> or Less Volume

1. Where the total estimated coniferous volume to be harvested in a cutting authority area is 2000 m<sup>3</sup> or less, and where the agreement under which the cutting authority authorizing harvesting on the cutting authority area has been issued has a coniferous allowable annual cut of not more than 3000 m<sup>3</sup>, or no coniferous allowable annual cut:
  - a. The stumpage rate for each species of coniferous timber in the cutting authority area must be determined using the stumpage rate in Table 6-1 for the forest zone in which the cutting authority area is located, except that,
    - i. Where the agreement holder is not required to establish a free growing crop of trees on the cutting authority area, the stumpage rate for each species of coniferous timber must be the sum of the rate determined under paragraph (a) of this subsection and the basic silviculture cost<sup>1</sup> for the species in the applicable Interior Area, or
    - ii. Where the Crown is responsible for basic silviculture on the cutting authority area, the stumpage rate for each species of coniferous timber must be the sum of the rate determined under paragraph (a) of this subsection and the silviculture levy determined under section 5.3.
2. Except as provided in subsection 4 of this section or section 6.2.1, where the total estimated coniferous volume to be harvested on a cutting authority area is 5000 m<sup>3</sup> or less, and the cutting authority authorizing harvesting on the cutting authority area is a competitively awarded forestry licence to cut, other than a BCTS licence:
  - a. Except as provided in paragraph (d) of this subsection, the upset stumpage rate for each species of coniferous timber in the cutting authority area will be 70 % of the stumpage rate for that species in Table 6-1 for the forest zone in which the cutting authority area is located, except that,
  - b. Where applications for a forestry licence to cut have been invited with upset stumpage rates determined under this subsection and no applications have been received, the upset stumpage rate for each species of coniferous timber must be the rate requested by the district manager and approved by the regional manager.
  - c. Where the regional manager does not anticipate that applications for a forestry licence to cut will be received due to market conditions or timber profile, the upset stumpage rate for each species of coniferous timber must be the rate requested by the district manager and approved by the regional manager.
  - d. Where the Crown is responsible for basic silviculture on the cutting authority area, the upset stumpage rate for each species of coniferous timber must be the sum of the rate determined under paragraphs (a), (b) or (c) of this subsection and the basic silviculture levy determined under section 5.3.

---

<sup>1</sup> From the Interior Basic Silviculture Costs published quarterly and available on the Timber Pricing Branch website.

3. Where the cutting authority authorizing harvesting is a competitively awarded licence to cut other than a BCTS licence, and
  - a. The Total Net Cruise Volume is 5000 m<sup>3</sup> or less, and
  - b. The cutting authority has been approved as cruise based under section 106 of the *Act*, the upset must be no less than the district's cost to prepare the timber for sale as calculated by the district manager and the total stumpage must apply to all species of timber on the cutting authority area.
4. An upset stumpage rate determined under subsection (2) of this section must not be less than the district's variable cost per cubic metre to prepare the timber for sale as calculated by the district manager.
5. Except for a minister directed reappraisal (as provided in section 2.2.4), where the upset stumpage rate is determined under this section, the total stumpage is fixed for the term of the cutting authority and all extensions.
6.
  - a. Notwithstanding subsections (1), (2) or (3) of this section, where the total coniferous volume to be harvested on a cutting authority area is 5000 m<sup>3</sup> or less, the stumpage rate may be determined through a full appraisal in accordance with chapters 1, 2, 3, 4 and 5.
  - b. Where the stumpage rate is determined in accordance with this subsection the total stumpage rate is fixed for the term and all extensions.

### 6.2.1 Forestry Licences to Cut for Specific Purposes (No Volume Limit)

1.
  - a. Where the cutting authority is a forestry licence to cut awarded to the highest bidder, other than a BCTS licence and it has been issued:
    - i. For the purpose of protecting a community from wildfire as prescribed under section 1 of the Licence to Cut Regulation, or
    - ii. For the purpose of removing damaged timber from natural stands or plantations as prescribed under section 4 of the Licence to Cut Regulation.
    - iii. For the purpose of utilizing post-harvest material in piles on landings or at roadside after a waste assessment has been made.

Then, the upset stumpage rate must be the rate approved by the Regional Manager.

- b. Where the invitation for applications for a forestry licence to cut awarded to the highest bidder referred to in paragraph (1)(a) of this subsection requires a bonus offer, and the amount of stumpage payable will be based on a cruise instead of a scale of the timber under section 106 of the *Act*, the upset stumpage value must be the value approved by the Regional Manager, and must apply to the net merchantable volume on the cutting authority area.

- c. Where the forestry licence to cut is issued without competition for the purposes described in paragraph (1)(a)(i) of this section the sawlog stumpage rate for such species of coniferous timber must be:
    - i. Except as provided in (ii), the stumpage rate in Table 6-1 for the forest zone in which the cutting authority area is located.
    - ii. If more than one-third of the total volume of coniferous timber to be harvested in the cutting authority area is damaged timber as defined in section 6.4.1(3), the stumpage rate in Table 6-4 for the forest zone in which the cutting authority area is located.
    - iii. When the licence to cut is issued to the lowest eligible bidder on a contract issued for the purpose referred to in paragraph (1)(a)(i) of this subsection, the stumpage rate determined from the applicable paragraph (c)(i) or (c)(ii) above.
  - d. Where the forestry licence to cut is issued without competition meets the requirements set out in paragraph (1)(a)(ii) of this section, the coniferous sawlog stumpage rate must be \$1.20/m<sup>3</sup> when the licence to cut is issued to the lowest eligible bidder on a contract issued for the purpose referred to in paragraph (1)(a)(ii).
  - e. Notwithstanding any paragraph in this subsection when the timber on the cutting authority area will be scaled as chips or hogged tree material the reserve stumpage rate must be the rate from Table 6-7.
2. An upset stumpage rate determined under this section must be calculated using the *Interior Appraisal Manual* in effect on the date that the rate is determined and must not be less than the district's variable cost to prepare the timber for sale as calculated by the district manager.
  3. Notwithstanding subsections 1(c) or (d) the stumpage rate for the forestry licence to cut may be determined through a full appraisal in accordance with chapters 1, 2, 3, 4 and 5. The cruise data that is used in the appraisal may be from the cruise of a comparable cutting authority as per section 1.5.1.1.
  4. Except for a minister directed reappraisal (as provided in section 2.2.4), when the upset stumpage rate or stumpage rate is determined under this section, the total stumpage rate is fixed for the term of the cutting authority and all extensions.

### 6.3 Road Permit Stumpage Rates

1. a. In this section the area of a forest district or the area of a timber supply area does not include the area of a park located within that district or timber supply area.
  - b. In this section the area of a Tree Farm Licence will be included in the area of the district or timber supply area in which it is geographically located.
2. This section does not apply to Community Forest Agreements in section 6.1.1, Woodlots Licences in section 6.1.2 except 6.1.2(4), or any timber in the Research Forests noted in Table 6-7.
3. A stumpage rate determined under this section, other than for a road permit for a BCTS licence under subsection (6), must be re-determined annually on June 1st in accordance with this section.
4. Except as provided in subsection (6)(b), stumpage rates determined under this section are scale based for billing.
5. Except as provided in subsection (6) of this section, the stumpage rate for a road permit must be the stumpage rate:
  - a. from the table of licence average rates by district provided to the regional Area by Timber Pricing Branch, or
  - b. where a rate under (a) is not available, the average stumpage rate is that prescribed in Table 6-3 for the smaller area of the forest district/district portion, timber supply area, region, or Area in which the entire cutting authority area for the tenure is located.
6. a. The total stumpage rate (\$/m<sup>3</sup>) for a road permit granted to the holder of a scale-based timber sale licence entered into under section 20 of the Act must be the same as the total stumpage rate (\$/m<sup>3</sup>) for the timber sale licence which entitled the holder to apply for the road permit.
  - b. The total stumpage rate (\$/ha) for a road permit granted to the holder of a cruise-based timber sale licence entered into under section 20 of the Act must be the same as the total stumpage rate (\$/ha) of the timber sale licence which entitled the holder to apply for the road permit.
7. Where a woodlot has an eligible extended road amortization agreement before December 1, 2008 the sawlog stumpage rate for a road permit with an effective date on or after December 1, 2008 is calculated using the procedures in this section.
8. The bonus bid if applicable will be added to the stumpage rate determined under subsection 5(b).

**Table 6-3: Coniferous Average Sawlog Stumpage Rates in \$/m<sup>3</sup> by Smallest Geographic Unit**

Smallest Geographic Unit	Average	<sup>1</sup> ESC	Smallest Geographic Unit	Average	<sup>1</sup> ESC
<b>North Area</b>	48.93	54.44	<b>South Area</b>	59.02	65.98
<b>Northeast Region</b>	49.87	55.50	<b>Cariboo Region</b>	63.07	71.16
Fort Nelson District <sup>2</sup>	33.92	41.10	100 Mile House District <sup>2</sup>	60.36	72.68
Peace District	49.87	55.50	Cariboo-Chilcotin District	70.74	77.47
Fort St. John TSA	48.83	56.41	Williams Lake TSA, blks F-H, J-N	74.04	80.38
Dawson Creek TSA	50.27	55.15	Williams Lake TSA, blks A-E, I	43.32	53.36
<b>Omineca Region</b>	56.18	62.37	Quesnel District	53.03	60.72
Mackenzie District <sup>2</sup>	42.43	47.58	Quesnel TSA	53.03	60.72
Prince George District	59.11	65.80	Cascadia TSA, blks 5-8	53.03	60.72
Robson Valley TSA	38.23	45.59	<b>Kootenay/Boundary Region</b>	53.90	60.51
Prince George TSA, blks E-I	60.52	67.16	Rocky Mountain District	63.66	68.82
Stuart Nechako District	56.57	62.12	Invermere TSA	62.86	67.16
Prince George TSA, blks A-C (formerly Fort St. James District)	59.10	64.23	Cranbrook TSA	64.35	70.27
Prince George TSA, blk D (formerly Vanderhoof District)	46.17	53.49	Selkirk District	50.45	57.56
<b>Skeena Region</b>	37.05	41.43	Arrow TSA	48.45	55.72
Coast Mountains District	4.95	6.77	Cascadia TSA, blks 1-3	48.45	55.72
Nass TSA	6.37	8.64	Boundary TSA	57.12	65.64
Kalum TSA	3.04	4.25	Golden TSA	57.80	62.14
Cascadia TSA, blks 9-11	3.04	4.25	Revelstoke TSA	26.41	37.25
Pacific TSA	3.04	4.25	Cascadia TSA, blk 4	26.41	37.25
Nadina District	51.45	57.13	Kootenay Lake TSA	58.32	64.35
Morice TSA	51.62	57.07	<b>Thompson/Okanagan Region</b>	60.58	67.18
Lakes TSA	50.62	57.46	Cascades District	69.09	74.37
Skeena Stikine District	39.75	44.01	Merritt TSA	76.19	81.48
Bulkley TSA	49.21	53.65	Lillooet TSA	40.20	45.42
Kispiox TSA	28.84	32.86	Okanagan Shuswap District <sup>2</sup>	56.50	63.43
Cassiar TSA	6.37	8.64	Thompson Rivers District <sup>2</sup>	59.38	66.69

<sup>1</sup> ESC is the average rate excluding basic silviculture costs.<sup>2</sup> TSA and District geographic boundary is equal.

## **6.4 Salvage Timber Stumpage Rates**

### **6.4.1 Post-Harvest Material or Damaged Timber**

1. This section applies to cutting authorities issued under licences which do not have an allowable annual cut.
2. Post-Harvest Material is defined as:
  - a. wooden culverts and bridges, or
  - b. post logging residue.
3. Damaged Timber is defined as:
  - a. Trees that are dead or damaged as a result of wind, fire, snow press, drought, landslide, flooding; or
  - b. Trees as a result of the effects of forest pests or disease that are dead; or
  - c. Trees that require management and control of insect infestation or will die within one year (sanitation timber salvage), as determined by the district manager.
4. Except as provided in section 6.2.1(1)(c)(ii), the criteria and methodology for the calculation of salvaged timber stumpage rates are:
  - a. Post-harvest material may not be combined in the same cutting authority area with damaged timber.
  - b. Except where damage to adjacent or contiguous timber occurs after harvesting is completed on the adjacent primary logging cutting permit area and the harvesting equipment has been demobilized from the area, damaged timber salvage cutting authority areas must be scattered, and not be adjacent to or contiguous with an existing cutting authority area.
  - c. Cut block(s) must be less than or equal to 5 hectares in size; (unless the silviculture system used on the cut block is other than clear cutting, and at the completion of harvest the trees retained on the harvested area conform to the specifications in the Chief Forester's Reference Guide for Forest Development Plan Stocking Standards for the applicable silviculture system).
  - d. Salvage logging stumpage rates may only be determined for a cutting authority where more than one-third of the total estimated volume of coniferous timber to be harvested in the cutting authority area is damaged timber.
  - e. Post-Harvest Material salvage may only occur after primary logging has been satisfactorily completed and residue and waste assessments have been submitted to and accepted by the Ministry.



- f. Salvage cannot occur on a road right-of-way which has an active timber mark associated with it.
- g. Except for a minister directed reappraisal (as provided in section 2.2.4), a stumpage rate determined under this section is fixed for the term of the cutting authority and all extensions.
5. a. The Damaged Timber sawlog stumpage rate for each species of coniferous timber is the rate in Table 6-4 or 6-4a for the Forest Zone in which the cutting authority area is located. The stumpage rates in Table 6-4a may be used when the:
- estimated total net coniferous volume of timber on each cutblock is comprised of 80% or more Burnt Timber<sup>1</sup> (Burnt timber means any trees that meet the definition of Fire Codes A, B or C as per the Cruising Manual), and
  - the burnt timber is evenly distributed throughout the cutblock(s).
- b. Where the Crown is responsible for basic silviculture on the cutting authority area, the stumpage rate for each species of coniferous timber must be the sum of the rate determined under paragraph (a) of this subsection and the silviculture levy determined under section 5.3.
- c. Notwithstanding paragraph (a), the stumpage rate for Damaged Timber may be determined through a full appraisal in accordance with chapters 1, 2, 3, 4 and 5.
6. The Post-Harvest Material sawlog stumpage rate for each species of coniferous timber is the rate in Table 6-5 for the forest zone in which the cutting authority area is located.

**Table 6-4: Coniferous Average Sawlog Stumpage Rates for Salvage of Damaged Timber in \$/m<sup>3</sup>**

FOREST ZONE	BA	CE	FI	HE	LA	LO	SP	WH	YE	AVG
North Central	32.21		40.67	16.29		28.31	35.67			32.79
North East (Fort Nelson)	30.57					27.83	30.96			29.59
	18.69					17.11	21.42			20.13
North West	14.21	7.09		3.97		24.60	24.91			12.90
South Central	24.58		25.65			22.30	31.87			25.71
South East	33.48	27.10	34.54	19.06	30.83	32.16	35.89	25.69	34.18	32.77
South West	43.44	41.72	37.64	31.40	30.83	38.06	47.47	39.86		41.29

<sup>1</sup> Eighty (80) percent or more of the estimated total net coniferous volume defined as burnt timber in each cutblock, based on a professional estimate by a forest professional registered with the Association of BC Forest Professionals. The professional estimate must include a description and supporting information of how the estimate was generated.

**Table 6-4a: Coniferous Average Sawlog Stumpage Rates for Salvage of Fire Damaged Timber in \$/m<sup>3</sup>**

FOREST ZONE	BA	CE	FI	HE	LA	LO	SP	WH	YE	AVG
North Central	22.57		40.91	13.47		23.45	26.72			26.13
North East (Fort Nelson)	21.42					23.05	23.19			23.59
	13.10					14.17	16.04			16.05
North West	9.96	6.06		3.29		20.37	18.67			10.29
South Central	17.22		25.80			18.46	23.88			20.49
South East	23.46	23.16	34.75	15.75	26.77	26.64	26.89	21.28	29.83	26.12
South West	30.44	35.65	37.87	25.96	26.77	31.52	35.57	33.03		32.91

**Table 6-5: Coniferous Average Sawlog Stumpage Rates for Salvage of Post-Harvest Material in \$/m<sup>3</sup>**

FOREST ZONE	BA	CE	FI	HE	LA	LO	SP	WH	YE	AVG
North Central	13.34		34.95	8.73		25.39	28.65			26.40
North East (Fort Nelson)	12.66					24.96	24.87			23.83
	7.74					15.35	17.20			16.21
North West	5.89	10.15		2.13		22.06	20.01			10.39
South Central	10.18		22.04			20.00	25.60			20.70
South East	13.87	38.82	29.68	10.22	29.58	28.85	28.83	24.02	29.12	26.39
South West	18.00	59.74	32.35	16.83	29.58	34.13	38.13	37.28		33.24

#### 6.4.2 Blanket Salvage Cutting Authorities

1. This section may apply to cutting authorities issued under licences with an allowable annual cut or maximum harvest volume; excluding Community Forest Agreements in section 6.1.1, Woodlots Licences in section 6.1.2, BCTS or any timber in the Research Forests noted in Table 6-7.
2. Cutblocks amended into blanket salvage cutting authorities prior to February 15, 2016, must use section 6.4.2 of this manual as it was prior to February 15, 2016.
3. Cutblocks amended into blanket salvage cutting authorities on or after February 15, 2016 must be consistent with the Deputy Minister Memo: *Harvesting under a Blanket Salvage Permit (For Interior Regions)* signed January 29, 2016, where the cutblocks must be:
  - a. less than or equal to 15 hectares in size and 5000 m<sup>3</sup> in volume; (unless the silviculture system used on the cut block is other than clear cutting, and at the completion of harvest the trees retained on the harvested area conform to the stocking standards specified in an approved Forest Stewardship Plan); and
  - b. issued for purposes of harvesting damaged timber as defined in section 6.4.1 (3); and
  - c. consistent with *District Guidelines for Blanket Salvage Cutting Authorities*.

4. The stumpage rate for each species of coniferous timber on the cutting authority area is the stumpage rate for that species indicated in Table 6-4 or 6-4a for the forest zone in which the cutting authority area is located. The stumpage rates in Table 6-4a may be used when the:
  - a. estimated total net coniferous volume of timber on each cutblock is comprised of 80% or more Burnt Timber<sup>1</sup> (Burnt Timber means any trees that meet the definition of Fire Codes A, B or C as per the Cruising Manual), and
  - b. the burnt timber is evenly distributed throughout the cutblock(s).
5. All blanket salvage cutting authorities are scale based for billing.
6. A stumpage rate determined under this section must be re-determined semi-annually on June 1<sup>st</sup> and December 15<sup>th</sup> in accordance with this section.
7. The bonus bid if applicable will be added to the stumpage rate determined under subsection 4.

### 6.4.3 Cruise Based Salvage Cutting Authorities

1. This section may apply to cutting authorities entered into under a Timber Sale Licence or issued under licences with an allowable annual cut or maximum harvest volume; excluding Community Forest Agreements in section 6.1.1, Woodlots Licences in section 6.1.2, or any timber in the Research Forests noted in Table 6-7.
2. The primary purpose for the cutting authority must be the removal of Mountain Pine Beetle (MPB) attacked Lodgepole pine where:
  - a. The estimated total net coniferous volume of timber on each cutblock for the cutting authority area is comprised of 75% or more grey MPB attacked Lodgepole pine<sup>2</sup>; and
  - b. The conifer species other than Lodgepole pine must be evenly distributed throughout each cutblock.
3. The stand-as-a-whole stumpage rate on the cutting authority area is the greater of:
  - a. Stumpage rate

$$= \text{BASE RATE} - [1.735 * (\text{CYCLE} + (0.5 * \text{CYCLE\_INC6})) + 6.573 * \text{ZONE 9} + (0.05444 * \text{ISOLATED} * (\text{DISTANCE} - 100))] * \text{CPI} - [\text{SO's} * (\text{CPI}/\text{ACPI})/(1-\text{LG})]$$

Where:

BASE RATE = Rate indicated in Table 6-6 for the Forest Zone in which the cutting authority is located.

CYCLE = as defined and measured in accordance with section 3.2.13.

CYCLE\_INC6, = as defined in section 3.2

<sup>1</sup> Eighty (80) percent or more of the estimated total net coniferous volume defined as burnt timber in each cutblock, based on a professional estimate by a forest professional registered with the Association of BC Forest Professionals. The professional estimate must include a description and supporting information of how the estimate was generated.

<sup>2</sup> Seventy-five (75) percent or more of the estimated total net coniferous volume defined as grey attack in each cutblock, based on a professional estimate by a forest professional registered with the Association of BC Forest Professionals. The professional estimate must include a description and supporting information of how the estimate was generated.

ZONE 9,  
ISOLATED,  
DISTANCE,  
CPI and CPIF

SO's = the sum of the transportation specified operations that apply to the transportation route from section 3.3.

LG = as defined in section 3.4

ACPI = as defined in section 3.4; or

b. The prescribed minimum stumpage rate.

**Table 6-6: Base Rate\* for Cruise Based Salvage Cutting Authorities by Forest Zone**

FOREST ZONE	BASE RATE**(\$/m <sup>3</sup> )	TSL BASE RATE***(\$/m <sup>3</sup> )
North Central	20.44	45.83
North East	20.44	45.83
North West	20.44	45.83
South Central	20.44	45.83
South East	20.44	45.83
South West	20.44	45.83

\* Rate prior to adjustments for transportation, isolated and zone 9

\*\* The Base Rate for cutting authorities issued under licences with an allowable annual cut or maximum harvest volume

\*\*\* The Base Rate for cutting authorities entered into under a Timber Sale Licence

4. All cruise-based salvage cutting authorities under this section are cruise based for billing.
5. The net merchantable volume per hectare for the cutting authority area must be determined using the method described in section 2.9.1 of the *Cruising Manual*.
6. The total net merchantable volume is equal to the net merchantable area multiplied by the net merchantable volume per hectare.
7. A stumpage rate determined under this section must be re-determined on the 1<sup>st</sup> day of the month following the month in which this section is updated with a new cruise-based salvage equation. As per section 5.1(5), this does not apply to cutting authorities entered into under a Timber Sale Licence.

#### **6.4.4 BCTS Salvage Timber Sale Licence**

1. This section may apply to cutting authorities entered into under a Timber Sale Licence.
2. Cutblocks must be consistent with the requirements in subsection 6.4.2 (3) for blanket salvage cutting authorities.
3. The BCTS salvage upset rate (section 5.1.1(3)) is the average stumpage rate, weighted by the estimated volume of each species in the cutting authority, indicated in Table 6-4 for the forest zone in which the cutting authority area is located. The stumpage rates in Table 6-4a may be used when the:
  - a. estimated total net coniferous volume of timber on each cutblock is comprised of 80% or more Burnt Timber<sup>1</sup> (Burnt timber means any trees that meet the definition of Fire Codes A, B or C as per the Cruising Manual), and
  - b. the burnt timber is evenly distributed throughout the cutblock(s).
4. All BCTS salvage timber sale licences are scale based for billing.
5. A stumpage rate determined under this section is fixed for the term and all extensions.

---

<sup>1</sup> Eighty (80) percent or more of the estimated total net coniferous volume defined as burnt timber in each cutblock, based on a professional estimate by a forest professional registered with the Association of BC Forest Professionals. The professional estimate must include a description and supporting information of how the estimate was generated.

## 6.5 Decked and Partially Harvested Timber for a non-BCTS Cutting Authority

1. When decked timber only is advertised for sale to the highest bidder, the upset stumpage rate for the timber must be the total of the silviculture levy determined under section 5.3 and:
  - a. The prescribed minimum stumpage rate if the timber has been decked for over three years, or
  - b. 70% of the stumpage rate from Table 6-4 for the applicable species and forest zone if the timber has been decked for three years or less.
2. When decked timber only is sold directly without the use of the competitive bidding process, the stumpage rate for the timber must be the total of the silviculture levy determined under section 5.3 and:
  - a. The variable cost to prepare the timber for sale if the timber has been decked for over three years, or
  - b. The stumpage rate from Table 6-4 for the applicable species and forest zone if the timber has been decked for three years or less.
3. When partially harvested timber only is advertised for sale to the highest bidder the upset stumpage rate for the timber must be the total of the silviculture levy determined under section 5.3 and:
  - a. The prescribed minimum stumpage rate, if three years or more have passed since the timber was felled, or
  - b. 70% of the stumpage rate for the applicable species and forest zone from Table 6-5 if less than three years have passed since the timber was felled.
4. When partially harvested timber only is awarded directly without the use of the competitive bidding process, the stumpage rate for the timber must be the total of the silviculture levy determined under section 5.3 and:
  - a. The variable cost to prepare the timber for award if three years or more have passed since the timber was felled, or
  - b. The stumpage rate from Table 6-5 for the applicable species and forest zone if less than three years have passed since the timber was felled.
5.
  - a. Where applications for decked timber or partially harvested timber being sold to the highest bidder have been invited with an upset stumpage rate determined under subsections 1(b), 3(b) or 6(a) of this section and no applications have been received, the upset stumpage rate must be the rate approved by the Regional Manager.
  - b. Where the regional manager does not anticipate that applications will be received for decked timber or partially harvested timber being sold to the highest bidder due to market conditions or timber profile, the upset stumpage rate determined under subsections 1(b), 3(b) and 6(a) of this section must be the rate approved by the regional manager.

- c. An upset stumpage rate determined under paragraphs (a) or (b) of this subsection must not be less than the district's variable cost to prepare the timber for sale.
6. a. Where applications for a forestry licence to cut that applies to both decked timber and partially harvested timber have been invited, the upset stumpage rate must be the total of the rate determined using the procedures in subsection (1) of this section, as if the timber was all decked timber and the silviculture levy determined under section 5.3.  
b. Where a forestry licence to cut that applies to both decked timber and partially harvested timber is entered into directly without the use of the competitive bidding process the stumpage rate must be the total of the rate determined using the procedure in subsection 2 of this section as if the timber was all decked timber and the silviculture levy determined under section 5.3.
7. Where the upset stumpage rate or the stumpage rate has been determined using this section the total stumpage rate must be fixed for the term of the cutting authority and all extensions.
8. An upset stumpage rate calculated under this section must be calculated using the *Interior Appraisal Manual* in effect on the date that the rate is determined (appraisal effective date).

## 6.6 Miscellaneous Stumpage Rates

1. Unless otherwise specified in this manual, the stumpage rates in Table 6-7 apply to scale-based cutting authorities issued for the product or purpose described.
2. Special Forest Product (SFP) Codes are described in the Special Forest Products Regulation under the Act.
3. For SFP codes CH and HF, where the post-harvest material is removed under a tenure different from the original cruise based cutting authority, a waste assessment is not required.

**Table 6-7: Miscellaneous Stumpage Rates**

Species	SFP Code	Product	Reserve Stumpage Rate
All Species	SB	Shake & Shingle Bolts, Blocks and Blanks	\$5.30/m <sup>3</sup>
All Species	SK	Shakes	\$6.00/m <sup>3</sup>
Cedar	PR	Posts & Rails (Split and Round)	\$3.00/m <sup>3</sup>
All other Species	PR	Posts & Rails (Split and Round)	\$1.20/m <sup>3</sup>
All Species	MT	Mining Timbers	\$3.00/m <sup>3</sup>
All Species	FW	Firewood	\$0.50/m <sup>3</sup>
Yew		All	\$0.25/m <sup>3</sup>
All Species	CH	Wood chips from post-harvest material where a waste assessment has been made	\$0.25/m <sup>3</sup>
All Species	HF	Hogged tree material from post-harvest material where a waste assessment has been made	\$0.25/m <sup>3</sup>
All Species		Grades 4 and 6, except where the upset stumpage rate is determined under section 6.2.1(1)(a) and (b) and 5.1.1(4)	\$0.25/m <sup>3</sup>
Deciduous Species		All, except grades 4 and 6 and except where the upset stumpage rate is calculated under section 6.2.1(1)(a) and (b) and 5.1.1(4)	\$0.50/m <sup>3</sup>
All Species	SS	Stakes & Sticks	\$1.20/m <sup>3</sup>
All Species	XM	Christmas Tree Length:	under 3m 3-5 m over 5 m \$0.20/each \$1.00/each \$1.50/each
All Species	CA	Cants (produced from dead and down post-logging residue)	\$3.00/m <sup>3</sup>
All Species		Logs salvaged below the high-water levels of Reservoir Lakes and the Shuswap, Slocan, Kootenay, Mineral, and Babine Lakes	\$0.25/m <sup>3</sup>
All Species		Marine Beachcomb	\$0.70/m <sup>3</sup>



Species	SFP Code	Product	Reserve Stumpage Rate
All Coniferous		For logs harvested from the following Research Forests: Alex Fraser (UBC), Aleza Lake (UBC and UNBC), College of New Caledonia (CNC), and Fort St. James (UNBC)	\$0.25/m <sup>3</sup>
All Species		Firmwood Reject (Grade code Z)	NIL
All Coniferous		<p>Commercial thinning refers to an intermediate harvest with regard to even-aged stand management with:</p> <ul style="list-style-type: none"> <li>• Commercial thin stocking standards incorporated in a Forest Stewardship plan,</li> <li>• Stand age less than 45 years old; and</li> <li>• Residual stand left in a healthy, productive condition</li> </ul> <p>Effective September 1, 2021 the following replaces the above - commercial thinning applies to even-aged forest stands as an intermediate harvest in the context of a broader stand management regime, where:</p> <ul style="list-style-type: none"> <li>• Stand age is 45 years or younger,</li> <li>• Approved Forest Stewardship Plan stocking standards for commercial thinning are consistent with the guiding principles of the current version of the <i>Interim Guidance for Commercial Thinning - Interior British Columbia</i>, and</li> <li>• Harvest operations are consistent with the current version of the <i>Interim Guidance for Commercial Thinning - Interior British Columbia</i>.</li> </ul>	\$0.25/m <sup>3</sup>

## 6.7 Specific Licences to Cut

1. This section applies to:
  - a. Master licences to cut.
  - b. Occupant licences to cut.
  - c. Forestry licences to cut issued under section 47.6(3) of the Act in conjunction with an activity funded out of the BCTS account.
  - d. Forestry licences to cut issued in conjunction with a works contract other than BCTS or issued for a fence line or protection of a fence line administered under the Range Act.
2. This section does not apply to:
  - a. Cutting authorities issued for the purpose described in section 6.7.1.
  - b. The proposed Site C reservoir and dam site.
  - c. Cutting authorities issued within a Controlled Recreational Area.
3. Unless otherwise directed by the Minister under section 2.2.4, the stumpage rate for any tenure listed in subsection (1) must be the stumpage rate excluding silviculture costs prescribed in Table 6-3 for the smaller of the area of the forest district, timber supply area, region, or Area in which the entire cutting authority area for the tenure is located.
4. Where the timber felled on the cutting authority area of any tenure listed in subsection (1) will not be removed from the site the volume used for billing may be estimated using an alternate method of scale approved by the Minister.
5. Except as provided under paragraph (6) of this section, the stumpage rate determined under this section will be re-determined annually on June 1st.
6. The stumpage rate determined under this section for a forestry licence to cut issued under section 47.6(3) of the *Act* is fixed for the term and all extensions.

### 6.7.1 Area-Based Stumpage Rates

1. This section applies to new Crown land area disturbed for mining exploration trails, seismic lines, gas or oil well sites and right-of-way to well sites or, authorizations for investigative purposes issued under the *Land Act*.
2.
  - a. Cutting authorities with less than 10 hectares of area must use the stumpage rate in Table 6-8 of the district it is geographically located.
  - b. Cutting authorities with 10 hectares or more area must use the stumpage rate excluding silviculture costs prescribed in Table 6-3 for the smaller of the area of the forest district, timber supply area, region, or Area in which the entire cutting authority area for the tenure is located.

**Table 6-8: Area-Based Reserve Stumpage Rates by District**

Forest District	Reserve Stumpage Rate (\$/hectare)
Coast Mountains	1,302
Ft. Nelson	2,942
Mackenzie	2,077
Nadina	2,498
Peace	2,713
Prince George	3,891
Rocky Mountain	3,378
Skeena-Stikine	4,026
Stuart Nechako	2,799

3. For seismic lines, the corresponding district reserve stumpage rate from Table 6-8 is adjusted according to the category of line clearing as follows.
  - a. Category 1 (any line section over 100 metres in length and over 4.25 metres in width) - no adjustment.
  - b. Category 2 (any line section over 100 metres in length and between 3.0 metres and 4.25 metres in width) - 1/2 of the reserve stumpage rate.
  - c. Category 3 (any line section over 100 metres in length and less than 3.0 metres in width) - 1/3 of the reserve stumpage rate.

All clearing activity must follow the best practices of meandering avoidance, line of site to a maximum of 200 metres, and avoidance of merchantable timber wherever possible. Failure to employ these best practices (as determined by the district manager) will result in the line clearing being billed as Category 1.

4. The gross area for each new seismic line category reported on the Oil and Gas Commission's Geophysical Final Plan cover sheet or an As-Cleared Plan is multiplied by the reserve stumpage rate determine in subsection (3).
5. The stumpage rate determined under this section is fixed for the term and all extensions.

## **6.8 Controlled Recreation Areas (CRAs)**

1. The sawlog stumpage rate for coniferous timber harvested under any cutting authority issued for a cutting authority area within a CRA is the stumpage rate approved by the director for each quarter.
2. The stumpage rate determined under subsection (1) is redetermined on the anniversary date of the cutting authority in accordance with this section.
3. Notwithstanding any other subsection in this section, the stumpage rate may be determined through a full appraisal in accordance with chapters 1, 2, 3, 4 and 5.

## 6.9 Cruise Based Stumpage Calculations

1. Pursuant to section 106 of the *Act*, and subject to subsection 2 of this section, the amount of stumpage payable on Crown timber will be calculated using information provided by a cruise of the timber before it is cut where the timber is authorized for harvest:
  - a. Under a cutting authority issued or entered into prior to June 1, 2010 where:
    - i. the stumpage rate is adjustable,
    - ii. the Total Net Coniferous Volume of timber on the cutting authority area is comprised of 35% or more red and grey Mountain Pine Beetle (MPB) attacked Lodgepole pine<sup>1</sup>, and
    - iii. timber harvesting has not started on the cutting authority, or,
  - b. Under a cutting authority issued or entered into on or after June 1, 2010 where:
    - i. the stumpage rate is adjustable,
    - ii. the licensee applied for a cutting permit and submitted an ADS to the district manager before June 1, 2010, and,
    - iii. the Total Net Coniferous Volume of timber on the cutting authority area is comprised of 35% or more red and grey MPB attacked Lodgepole pine<sup>1</sup>, or,
  - c. Under a cutting authority issued or entered into on or after June 1, 2010 where:
    - i. the stumpage rate is adjustable,
    - ii. the licensee submitted an ADS to the district manager on or after June 1, 2010, and
    - iii. the Total Net Coniferous Volume in each cutblock within the cutting authority area is comprised of 35% or more red and grey MPB attacked Lodgepole pine<sup>1</sup>, or,
  - d. Under a timber sale licence with a fixed stumpage rate, which meets the criteria in paragraph (1)(c) (ii) and (iii) of this section, or a timber sale licence with a fixed stumpage rate where the executive director, BCTS has approved cruise based under section 106 of the *Act*, or
  - e. Under a cutting authority that meets the criteria of section 6.4.3.
2. Except as provided in subsections (3) of this section, and section 5.1.1 (4), the stumpage rate effective July 1, 2010 for a cutting authority where the stumpage payable is cruise based must be calculated as stand as a whole in accordance with the following:
  - a. the stumpage rate is determined using chapters 1, 2, 3, 4, 5, or section 6.4.3 of this manual,
  - b. the stumpage rate determined under paragraph (a) of this subsection must apply to the net merchantable volume on the cutting authority area.

---

<sup>1</sup> The absolute fraction to the nearest 0.1% derived from dividing the sum of the Red and Grey attack volumes in each cutblock by the total net coniferous cruise volume in each cut block (both from the appraisal summary report from the cruise compilation).

3. Except as provided in subsections (4) and (5) of this section, if, after an insect damage reappraisal under section 2.2.5 of this manual:
  - a. the Total Net Coniferous Volume in each cutblock within the cutting authority area is comprised of 35% or more red and grey MPB attacked Lodgepole pine, and
  - b. timber harvesting has not yet started on the cutting authority area, the stumpage payable may be cruise based.
4. Where an occupant licence to cut has been issued for the purposes of removing timber for agriculture, the stumpage payable must be scale based.
5. Where a non-replaceable forest licence (NRFL) or a forestry licence-to-cut (FLTC) was advertised on the basis of competition, and the successful bidder's bonus bid only applied to the sawlog portion of the volume advertised, the stumpage payable for cutting permits issued under these licences must remain scale based.
6. Where the sawlog volume of a cutting authority was advertised on the basis of competition and
  - a. The cutting authority was issued prior to June 1, 2010, and
  - b. The stumpage payable is cruise based,

The bonus bid must be prorated by the person who determines the stumpage rate using Tables 4-8 or 4-9 of this manual as per section 4.6.

## **6.10 Section 103(3) of the Act**

Stumpage for the purposes of section 103(3) of the *Act* must be calculated in accordance with the procedure approved by the Director.

## **6.11 Forest Enhancement Society of BC (FESBC)**

1. Notwithstanding any other section of this chapter, a cutting authority issued with projects funded by the FESBC for the purpose of stand restoration and/or rehabilitation must have the stumpage rate determined by a full appraisal (“fully appraised”) in accordance with chapters 1, 2, 3, 4 and 5. Stand restoration and/or rehabilitation means the harvesting and reforestation of uneconomic stands of timber.
2. The person determining the stumpage rate must ensure all project costs incurred for development, harvesting, transportation or other tenure obligations costs funded by FESBC are excluded (or “backed out”) from the appraisal.
3. The licensee representative must submit a detailed list of the projects and cost estimates approved for funding.
4. Development project costs used in the FESBC economic test (to assess FESBC funding eligibility) for a cutting authority are not eligible for amortization agreements and cannot be used by the licensee in an appraisal for another cutting authority.



# Appendices

---

## Appendix I Equipment and Labour Rates

### Equipment Rates

EQUIPMENT DESCRIPTION	BLUE BOOK SECTION NUMBER	<sup>1</sup> BLUE BOOK CATEGORY	<sup>2</sup> BLUE BOOK MODELS	\$/HOUR
Drilling Equipment - Rock Drill	1.4		750 cfm compressor or Equivalent Tank Drill Outfit and 2 operators	265.44
Excavator – Heavy Hydraulic *	7.3	Class 4 45,000 – 50,999 lbs	<b>Case</b> CX210; <b>Cat</b> 320, 320F/FL/GC, 323FL; <b>Deere</b> 210G-LC; <b>Kobelco</b> SK210LC-10; <b>Komatsu</b> HB215LC-1, PC200LC-8; PC210LC-10/LCi-10; <b>Link-Belt</b> 210-X4	162.64
Excavator – Heavy Hydraulic *	7.3	Class 5 51,000 – 58,999 lbs	<b>Case</b> CX235C, CX250D; <b>Cat</b> 323,, 325F, 325F L; <b>Deere</b> 245G; <b>Hitachi</b> ZX245USLC-5/6, <b>Kobelco</b> SK230SRCL-5, SK260LC-10; <b>Komatsu</b> PC210LC-11/LCi-11, PC228USLC-10, PC240LC-10/11; <b>Link-Belt</b> 210X4LF, 245-X4, 250-X4; <b>Volvo</b> EC235E L, EC250E, ECR235E	168.19
Excavator – Heavy Hydraulic *	7.3	Class 6 59,000 – 67,999 lbs	<b>Case</b> CX300D; <b>Cat</b> 326F/F L, <b>Deere</b> 290G-LC; <b>Kobelco</b> SK270SRCL-5; <b>Komatsu</b> PC290LC-10; <b>Link-Belt</b> 300-X4; <b>Volvo</b> EC250ELC	188.16
Excavator – Heavy Hydraulic *	7.3	Class 7 68,000 – 87,999 lbs	<b>Case</b> CX350D; <b>Cat</b> 330F L, 335F L,, 336 F L XE; <b>Deere</b> 300GLC 345GLC, 380GLC; <b>Komatsu</b> PC290LC-11, PC360LC-10/11, PC390LC-10; <b>Link-Belt</b> 350X4; <b>Volvo</b> EC350EL, EC380E, ECR305CL, ECR355E/EL	226.88
Excavator – Heavy Hydraulic *	7.3	Class 8 88,000 – 95,999 lbs	<b>Komatsu</b> PC390LC-11	240.96
Excavator – Heavy Hydraulic *	7.3	Class 9 96,000 – 102,999 lbs	* <b>Case</b> CX460; * <b>Cat</b> 345CL, 345DL; * <b>Hyundai</b> 450LC-7; * <b>Komatsu</b> PC400LC-7/7EO, PC400LC-8/-8 VG, PC450LC-8; * <b>Link-Belt</b> 460LX; * <b>Volvo</b> EC460BLC *2006-2010 model years	*265.32
Excavator – Wheel	7.2	Class 7 70,000+ lbs	<b>Cat</b> M316F, M325DL MH, M325D MH	197.65

EQUIPMENT DESCRIPTION	BLUE BOOK SECTION NUMBER	<sup>1</sup> BLUE BOOK CATEGORY	<sup>2</sup> BLUE BOOK MODELS	\$/HOUR
Grader	8.1	Class 6 200-249 FWHP	<b>Cat</b> 140K, 140M VHP+, 160K; <b>Deere</b> 770G, 772G, <b>Komatsu</b> GD655-5, GD655-6	176.25
Lifting Equipment - Crane	9.2	20 tones (18 tonnes)		126.00
Loader - Front End 4X4 (Gravel)	10.2	Class 10 5 cu yd (3.82m <sup>3</sup> )	<b>Deere</b> 744K; <b>Volvo</b> L120H2	188.60
Loader – Front End (Logs)	10.2	Class 12 6 cu yd (4.59m <sup>3</sup> )	<b>Case</b> 1121F; <b>Deere</b> 824K; <b>Komatsu</b> WA480-6; <b>Volvo</b> L180H, L180H2	196.95
Skidder - Grapple Rubber Tired	17.1	Class 1 21,000 – 28,000 lbs (104-152 hp)	* <b>Cat</b> 515, 518C; * <b>Clark/Ranger</b> 666-C, 666-D, F-66, F-66-D, H-66- G; * <b>Deere</b> 540, 548-D/E/G/GII/GIII; * <b>TimberJack</b> 360-D, 380 A/B/C *2005 & older model years	*106.90
Skidder + Towed Roller: Vibratory Steel Wheel	17.1 & 13.6	3-4 tons (2.7- 3.6 tonne)	Section 17.1 Class 1 Skidder (2005 & Older) + Towed Vibratory Steel Wheel, 3-4 tons (2.7-3.6 tonnes)	122.15
Skidder + Towed Roller:	17.1 & 13.5	32 in. diameter (813mm) 2 drum	Section 17.1 Class 1 Skidder (2005 & Older) + Towed Grid Roller, 2 Drums, 32 inch (813mm) diamater	123.05
Tractor - Crawler	15.2	Class 3 85-129.9 FWHP	<b>Case</b> 1150M, 750M, 850M; <b>Cat</b> D6K2-T4; <b>Deere</b> 550K, 650K; <b>Dressta/Dresser</b> TD8S, TD9S	147.45
Tractor - Crawler	15.2	Class 4 130-189.9 FWHP	<b>Case</b> 1600M, <b>Cat</b> D6N-T4; <b>Deere</b> 700K	189.95
Tractor - Crawler	15.2	Class 5 190-259.9 FWHP	<b>Cat</b> 2050M; <b>Cat</b> D6T, D6T-T4; <b>Deer</b> 850K; <b>Dressta</b> TD-15M Extra	239.85
Tractor - Crawler	15.2	Class 6 260-359.9 FWHP	<b>Cat</b> D8T-T4; <b>Deere</b> 950K, 1050 K	286.85
Tractor - Crawler	15.2	Class 7 360-519.9 FWHP	* <b>Cat</b> DT9, D9T-T4 *2011-2015 model years	*329.55
Truck – Concrete Transit Mix	4.5	8 cu yd (6.1 m <sup>3</sup> )	Concrete Transit Mix Truck, 8cu yd (6.1m <sup>3</sup> )	113.95
Truck – Standard S/A or Tandem Gravel Dump Truck	16.1	14 cu yd (10.7m <sup>3</sup> )	Standard haul	107.45

EQUIPMENT DESCRIPTION	BLUE BOOK SECTION NUMBER	<sup>1</sup> BLUE BOOK CATEGORY	<sup>2</sup> BLUE BOOK MODELS	\$/HOUR
Truck – Standard S/A or Tandem Gravel Dump Truck	16.1	14 cu yd (10.7m <sup>3</sup> )	Rip rap haul (Additional 10%)	118.20
Truck - Off Highway Heavy Duty Dump Truck – Articulated	16.8	20-24 tonnes (22-26 tons)	<b>Cat 725C, 730 , Deere 260E; Volvo A25G</b>	170.80
Truck - Off Highway Heavy Duty Dump Truck – Articulated	16.8	25–29 tonnes (28-32 tons)	<b>Cat 725C, 730;Deere310E Volvo A30G</b>	188.65
Truck – Logging (Highway)	16.2-C	6 axle 45,000 kg	6 Axle Logging Truck (Highway)	134.35
Truck – Log Self Loading	16.2-C & 16.3	6 axle unit 45,000kg GVW with 5 ton Crane	Truck – Logging (Highway) and 5 ton (4.5 tonnes) Deck Crane	148.00
Truck - Lowbed	16.2-C	5 axle unit	25 tonnes approx max load, Tandem tractor and lowbed	122.40
Truck - Lowbed	16.2-C	7 axle unit	7 axel: 41 tonnes approx max load, A or B train (or triple axle with booster)	153.55
Truck – Lowbed	16.2-C	8 axle unit	A or B train (or triple axle with booster)	156.95
Truck – Miscellaneous – Pilot Vehicle	16.2-A		Pilot Vehicle	60.95

Source: 2019-2020 B.C. Road Builders & Heavy Construction Association, Equipment Rental Rate Guide (“The Blue Book”).

Rates are “all found” and include 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.

\*10% additional cost (5% for brush guard package and 5% for hydraulic thumb).

<sup>1</sup>BLUE BOOK CATEGORY Categories as applicable provide:

- Capacity in cubic feet per minute, diameter or tonnes (Drills, Rollers, Cranes)
- Capacity in yards/m<sup>3</sup> (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 years 2015-2018 unless “out of date” (pre-2015) in which case the rate in \$/hr is for the relevant Blue Book equipment model for the specified year.

### Miscellaneous Equipment Rates

EQUIPMENT DESCRIPTION	BLUE BOOK SECTION NUMBER	BLUE BOOK CATEGORY	*\$/HOUR
Concrete Mixer	4.4	6 cu ft (0.17 m <sup>3</sup> )	8.04
Concrete Vibrator	4.3	12' to 21' (3.65m – 6.10m)	5.30
Powersaw	11.1	Over 20+ inch blade; over 57cm <sup>3</sup>	3.85

Source: 2019/2020 Blue Book. Labour not included.

### Wage Rates

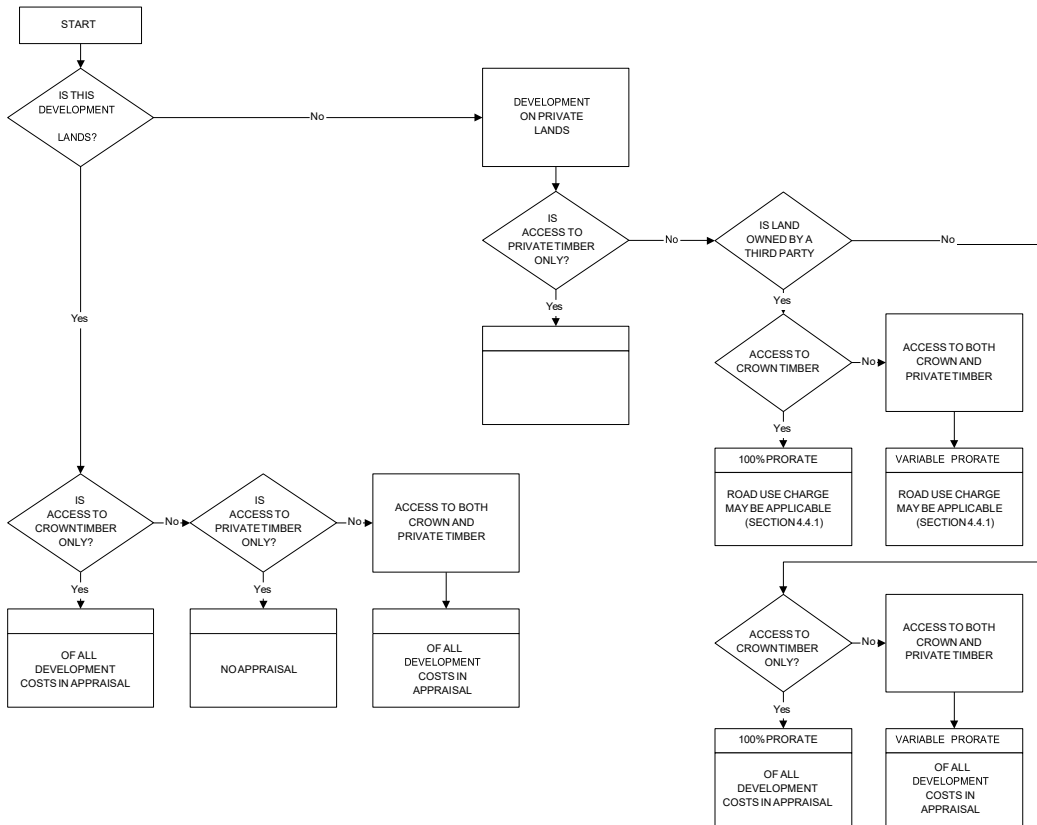
LABOUR DESCRIPTION	GROUP	*\$/HOUR
Labourer	Group I	46.13
Roadman	Group II	46.50
Crib/Culvert Maker, Powderman	Group VII	48.84
Landingman	Group VIII	49.46
Rockdriller & Powderman (for load & blast only)	Group VII & XI	108.24
Bridgeman	Tradesman	60.47
Faller, including powersaw cost		82.40

Source: 2019-2024 United Steelworkers agreement rates (Effective June 15, 2019). Includes 50% for payroll loading.

**Engineered Cost Estimates**

1. The labour and equipment rates in this appendix must be used for all engineering cost estimates made under section 4.3.6 of this manual.
2. Notwithstanding subsection (1), an engineered cost estimate may include:
  - a. \$175/day/vehicle for crew transportation if the crew transportation cost has not already been accounted for in the appraisal. Equipment 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 (i.e. licensee incurs or will incur the additional cost).
  - b. \$165/day/person for crew accommodation if those doing the work must stay in a camp (as defined in section 3.2.30) while working on the project, and if the camp cost has not already been accounted for in the appraisal.
  - c. \$3.76/hour for On-Road Equipment and \$8.78/hour for Off-Road Equipment for fuel price adjustments may be added to the “All-Found” Equipment Rates in this Appendix.
3. Use of rates for equipment not listed in this appendix must be approved by the regional timber pricing co-ordinator.

## Appendix II Development Cost Proration



Crown Timber = Appraised timber including appraised Timber Licences

Private Timber = Non-appraised timber

Variable Prorate = A tributary-volume type prorate between appraised and non-appraised timber

### Appendix III Relative Soil Moisture to Absolute Soil Moisture Conversion Table

BGC	Relative Soil Moisture Regime Class (from field guide)							
	0	1	2	3	4	5	6	7
BGxh1	XD	XD	XD	ED	ED	VD/MD	SD/F	M/VM/W
BGxh2	XD	XD	XD	ED	ED	VD/MD	SD/F	M/VM/W
BGxh3	XD	XD	XD	ED	ED	VD/MD	SD/F	M/VM/W
BGxw1	XD	XD	ED	VD	VD/MD	SD/F	M/VM	W
BGxw2	XD	XD	ED	VD	VD/MD	SD/F	M/VM	W
BWBSdk	VD	MD	MD	SD	F	M	VM	W
BWBSmk	VD	MD	MD	SD	F	M	VM	W
BWBSmw	VD	MD	MD	SD	F	M	VM	W
BWBSvk	VD	MD	SD	SD	F	M	VM	W
BWBSwk1	VD	MD	MD	SD	F	M	VM	W
BWBSwk2	VD	MD	MD	SD	F	M	VM	W
BWBSwk3	VD	MD	MD	SD	F	M	VM	W
CWHds1	ED	VD	MD	MD	SD/F	F	M/VM	W
CWHms1	VD	VD	MD	MD	SD/F	M	VM	W
CWHvm1	MD	MD	SD	F	M	M	VM	W
CWHvm2	MD	MD	SD	F	M	M	VM	W
CWHws1	VD	VD	MD	SD	F	M	VM	W
CWHws2	VD	MD	MD	SD	F	M	VM	W
ESSFdc1	VD	MD	MD	SD	SD/F	M	VM	W
ESSFdc2	VD	MD	MD	SD	F	M	VM	W
ESSFdc3	VD	MD	MD	SD	F	M	VM	W
ESSFdk1	VD	MD	MD	SD	F	M	VM	W
ESSFdk2	VD	MD	MD	SD	F	M	VM	W
ESSFdv1	VD	VD	MD	MD	SD/F	M	VM	W
ESSFdv2	VD	VD	MD	MD	SD/F	M	VM	W
ESSFmc	VD	MD	SD	SD	F	M	VM	W
ESSFmh	VD	MD	MD	SD	SD/F	M	VM	W
ESSFmk	VD	MD	MD	SD	F	M	VM	W
ESSFmm1	VD	MD	MD	SD	F	M	VM	W
ESSFmm2	VD	MD	MD	SD	F	M	VM	W
ESSFmm3	MD	MD	SD	SD/F	F	M	VM	W
ESSFmv1	VD	VD	MD	SD	F	M	VM	W
ESSFmv2	VD	VD	MD	SD	F	M	VM	W
ESSFmv3	VD	VD	MD	SD	F	M	VM	W
ESSFmv4	VD	VD	MD	SD	F	M	VM	W
ESSFmw	VD	VD	MD	SD	F	M	VM	W
ESSFmw1	VD	VD	MD	SD	F	M	VM	W
ESSFmw2	VD	VD	MD	SD	F	M	VM	W



Relative Soil Moisture Regime Class (from field guide)								
BGC	0	1	2	3	4	5	6	7
ESSFvc	MD	SD	SD	F	M	M	VM	W
ESSFwc2	MD	MD	SD	F	M	M	VM	W
ESSFwc3	MD	MD	SD	F	M	M	VM	W
ESSFwc4	MD	MD	SD	F	M	M	VM	W
ESSFwew	MD	SD	SD	F	M	VM	W	W
ESSFwh1	MD	MD	SD	F	F	M	VM	W
ESSFwh2	MD	MD	SD	SD/F	F	M	VM	W
ESSFwh3	MD	MD	SD	F	F	M	VM	W
ESSFwk1	MD	MD	SD	F	M	M	VM	W
ESSFwk2	MD	MD	SD	F	M	M	VM	W
ESSFwm1	MD	MD	SD	F	F	M	VM	W
ESSFwm2	MD	MD	SD	F	F	M	VM	W
ESSFwm3	MD	MD	SD	F	F	M	VM	W
ESSFwm4	MD	MD	MD	SD	F	M	VM	W
ESSFwv	MD	MD	SD	SD	F	M	VM	W
ESSFxc1	VD	VD	VD	MD	SD/F	M	VM	W
ESSFxc2	VD	VD	VD	MD	SD/F	M	VM	W
ESSFxc3	VD	VD	VD	MD	SD/F	M	VM	W
ESSF xv1	VD	VD	VD	MD	SD/F	M	VM	W
ESSF xv2	VD	VD	VD	MD	SD/F	M	VM	W
ICHdk	VD	VD	MD	MD	F	M	M/VM	VM
ICHdm	VD	VD	MD	SD	F	M	M/VM	VM
ICHdw1	ED	VD	MD	MD	SD	M	M	VM
ICHdw3	ED	VD	MD	MD	SD	M	M	VM
ICHdw4	ED	VD	MD	MD	SD	M	M	VM
ICHmc1	VD	MD	SD	SD	F	M	VM	W
ICHmc2	VD	MD	SD	SD	F	M	VM	W
ICHmk1	VD	MD	MD	SD	F	M	VM	VM/W
ICHmk2	VD	MD	MD	SD	F	M	VM	VM/W
ICHmk3	VD	MD	MD	SD	F	M	VM	VM/W
ICHmk4	VD	VD	MD	SD	F	M	VM	W
ICHmk5	VD	VD	MD	SD	F	M	VM	W
ICHmm	VD	MD	MD	SD	F	M	VM	VM/W
ICHmw1	VD	MD	MD	SD	F	M	VM	VM/W
ICHmw2	VD	MD	MD	SD	F	M	VM	VM/W
ICHmw3	VD	MD	MD	SD	F	M	VM	VM/W
ICHmw4	VD	MD	MD	SD	F	M	VM	VM/W
ICHmw5	VD	MD	MD	SD	F	M	VM	VM/W
ICHvc	MD	SD	SD	F	M	M	VM	W
ICHvk1	MD	MD	SD	F	M	M	VM	W
ICHvk2	MD	SD	SD	F	M	M	VM	W

Relative Soil Moisture Regime Class (from field guide)								
BGC	0	1	2	3	4	5	6	7
ICHwc	MD	MD	SD	F	F	M	VM	W
ICHwk1	VD	MD	SD	F	F	M	VM	W
ICHwk2	VD	MD	SD	F	F	M	VM	W
ICHwk3	VD	MD	SD	F	F	M	VM	W
ICHwk4	VD	MD	SD	F	F	M	VM	W
ICHxw	ED	ED	VD	MD	SD	M	M	VM
IDFdc	ED	ED	VD	MD	MD	SD/F	M	VM/W
IDFdk1	ED	ED	VD	VD/MD	MD	SD/F	M	VM/W
IDFdk2	ED	ED	VD	VD/MD	MD	SD/F	M	VM/W
IDFdk3	ED	ED	VD	VD	MD	SD/F	M	VM
IDFdk4	ED	ED	VD	VD	MD	SD/F	M	VM
IDFdk5	ED	ED	VD	VD	MD	SD/F	M	VM
IDFdm1	ED	ED	VD	VD	MD	SD/F	M	VM/W
IDFdm2	ED	ED	ED	VD	MD	SD/F	M	VM
IDFdw	ED	ED	ED	VD	MD	SD/F	M	VM
IDFmw1	ED	ED	VD	MD	SD	F	M	VM
IDFmw2	ED	ED	VD	MD	SD	F	VM	W
IDFww	ED	ED	VD	MD	SD/F	M	VM	W
IDFxc	XD	ED	VD	VD	VD/MD	SD/F	M	VM/W
IDFxb1	XD	ED	ED	VD	VD/MD	SD/F	M	VM/W
IDFxb2	XD	ED	ED	VD	VD/MD	SD/F	M	VM/W
IDFxb4	XD	ED	ED	VD	MD	SD/F	M	VM/W
IDFxbk	XD	XD	ED	ED	VD	SD/F	M	VM/W
IDFxbm	XD	ED	ED	VD	MD	SD/F	M	VM/W
IDFxbw	XD	ED	ED	VD	VD/MD	SD/F	M	VM/W
IDFxx2	XD	XD	ED	ED	VD	SD	M	VM/W
MHm1	SD	SD	F	F	M	VM	W	W
MHm2	SD	SD	F	F	M	VM	W	W
MHwh1	SD	SD	F	F	M	VM	W	W
MSdc1	VD	VD	MD	MD	SD/F	M	W	W
MSdc2	VD	VD	MD	MD	SD/F	M	VM	W
MSdc3	VD	VD	MD	MD	SD/F	M	VM	W
MSdk	VD	VD	MD	MD	SD	M	M	VM/W
MSdm1	VD	VD	MD	MD	SD/F	M	VM	W
MSdm2	VD	VD	MD	MD	SD/F	M	VM	W
MSdm3	VD	VD	MD	MD	SD/F	M	VM	W
MSdv	VD	VD	MD	MD	SD/F	M	VM	W
MSdw	VD	VD	MD	MD	SD	M	M	VM/W
MSmw1	VD	VD	MD	SD	SD/F	M	VM	W
MSmw2	VD	VD	MD	SD	SD/F	M	VM	W
MSxk1	VD	VD	VD	MD	SD/F	M	VM	W

Relative Soil Moisture Regime Class (from field guide)								
BGC	0	1	2	3	4	5	6	7
MSxk2	VD	VD	VD	MD	SD/F	M	VM	W
MSxk3	VD	VD	VD	MD	SD/F	M	VM	W
MSxv	VD	VD	VD	MD	SD/F	F	VM	W
PPxh1	XD	XD	ED	VD	VD/MD	SD/F	M/VM	W
PPxh2	XD	XD	ED	VD	VD/MD	SD/F	M/VM	W
PPxh3	XD	XD	ED	VD	VD/MD	SD/F	M	VM/W
SBPSdc	ED	ED	VD	MD	SD	F	M/VM	W
SBPSmc	VD	VD	VD	MD	SD	F	M/VM	W
SBPSmk	ED	VD	VD	MD	SD	F	M/VM	W
SBPSxc	ED	ED	VD	VD	MD	SD	M	W
SBSdh1	VD	MD	MD	SD	SD	F	M	W
SBSdh2	VD	MD	MD	SD	SD	F	M	W
SBSdk	VD	MD	MD	SD	SD	F	M/VM	W
SBSdw1	VD	MD	MD	SD	SD	F	M	W
SBSdw2	VD	MD	MD	SD	SD	F	M	W
SBSdw3	VD	MD	MD	SD	SD	F	M	W
SBSmc1	VD	MD	MD	SD	F	M	VM	W
SBSmc2	VD	MD	MD	SD	F	M	VM	W
SBSmc3	VD	MD	MD	SD	F	M	VM	W
SBSmh	VD	MD	MD	SD	SD	M	VM	W
SBSmk1	VD	MD	MD	SD	F	M	VM	W
SBSmk2	VD	MD	MD	SD	F	M	VM	W
SBSmm	VD	VD	MD	SD	SD/F	M	VM	W
SBSmw	VD	MD	MD	SD	F	M	VM	W
SBSvk	MD	SD	SD	F	M	M	VM	W
SBSwk1	VD	MD	SD	F	F	M	VM	W
SBSwk2	VD	MD	SD	F	F	M	VM	W
SBSwk3	VD	MD	SD	F	F	M	VM	W
SWBmk	MD	MD	SD	SD	F	M	VM	W
SWBmks	MD	MD	SD	SD	F	M	VM	W
SWBvk	MD	MD	SD	SD	F	M	VM	W
SWBvks	MD	MD	SD	SD	F	M	VM	W
ESSFdcw	VD	MD	MD	SD	F	M	VM	W
ESSFdkw	VD	MD	MD	SD	F	M	VM	W
ESSFdvw	VD	MD	MD	SD	F	M	VM	W
ESSFmmw	MD	MD	SD	F	M	M	VM	W
ESSFwmw	MD	SD	SD	F	M	M	W	W
ESSFxcw	VD	VD	MD	SD	SD/F	M	VM	W
ESSFxcvw	VD	MD	MD	SD	F	M	VM	W
ESSFvcw	MD	SD	SD	F	M	VM	W	W

NOTES:

- ED = Extremely
- VD = Very Dry
- MD = Moderately Dry
- SD = Slightly Dry
- F = Fresh
- M = Moist
- VM = Very Moist
- W = Wet

<b>Absolute Soil Moisture</b>	<b>Soil Moisture Code</b>
ED, VD, or MD	D-Dry
SD or F	M-Moist
M, VM or W	W-Wet

## Appendix IV Appraisal Map Content

1. An appraisal data submission must include a map (or maps) at a scale suitable for the information provided.
2. All maps must be in georeferenced PDF electronic format.
3. The following map information must be provided for in an appraisal or reappraisal data submission:
  - a. Cutting authority boundaries.
  - b. Delineation of leave tree retention or reserved areas within the cutting authority.
  - c. Delineation of biogeoclimatic zone, subzone and variant areas.
  - d. Delineation of areas by harvest method (ground, cable, or helicopter, etc.) and clear cut or partial cut (as defined in the IAM).
  - e. Delineation of areas that are the subject of cost estimates (e.g. root disease control).
  - f. Delineation of development projects with cost estimates that will be used in a future cutting authority.
  - g. Delineation of the cutting authority area forming the polygon referred to in section 1.4.2; unless the distance between the furthest boundaries of the furthest cutblocks is less than 10 km.
  - h. The geographic centre point of the cutting authority.
  - i. The geographic centre point of each cutblock and common junction of the permit.
  - j. Existing roads.
  - k. Roads to be built by type (long term, short term) and by section, as submitted in the ADS, including sections to be gravelled and or sections that are “wet” (as defined in this manual).
  - l. Location of roads/structures, borrow pits, gravel pits and rock quarries that are included in engineered cost estimates. Culverts less than 950 mm are excluded from this requirement.
  - m. Location and type of other development such as remedial fencing, cattleguards and pipeline crossings.
  - n. Map Scale indicated using a graphic bar scale.
4. Maps may include other information considered relevant to the appraisal data submission.

## Appendix V Enhanced Silviculture Regimes

BEC Unit	Plan	Regime Name
ESSFdc2	Merritt ISS	Increased Planting Density
ESSFmc	Bulkley ISS	Pli leading -1800 sph
		Sx leading
	Prince George FSP#11	Increased Target Stocking
	WFM Morice FSP 660	Pli leading
Sx leading		
ESSFmk	WFM Morice FSP 660	Pli leading
		Sx leading
ESSFmv1	Prince George FSP#11	Increased Target Stocking
ESSFmv3	WFM Morice FSP 660	Sx leading
ESSFmw1	Merritt ISS	Increased Planting Density
ESSFwc3	Cariboo Regional Standard	Enhanced Density
ESSFwk1	Cariboo Regional Standard	Enhanced Density
	Prince George FSP#11	Increased Target Stocking
ESSFxc1	Merritt ISS	Increased Planting Density
ESSFxc2	Merritt ISS	Increased Planting Density
ICHmk3	Cariboo Regional Standard	Enhanced Diverse
ICHvk2	Prince George FSP#11	Increased Target Stocking
ICHwk2	Cariboo Regional Standard	Enhanced Diverse
ICHwk3	Prince George FSP#11	Increased Target Stocking
ICHwk4	Cariboo Regional Standard	Enhanced Diverse
IDFdk1	2017 Wildfire	Post-Wildfire Fdi
	Merritt ISS	Increased Planting Density
IDFdk2	Merritt ISS	Increased Planting Density
IDFdk3	2017 Wildfire	Post-Wildfire Fdi
IDFdk4	2017 Wildfire	Post-Wildfire Fdi
IDFxd1	Merritt ISS	Increased Planting Density
IDFxd2	2017 Wildfire	Post-Wildfire Fdi
	Merritt ISS	Increased Planting Density
IDFxm	2017 Wildfire	Post-Wildfire Fdi
MSxk1	Merritt ISS	Increased Planting Density
MSxk2	2017 Wildfire	Post-Wildfire Fdi
	Merritt ISS	Increased Planting Density
SBPSdc	Prince George FSP#11	Increased Target Stocking
SBPSmk	Cariboo Regional Standard	Enhanced Density
SBSdk	Bulkley ISS	Pli leading -1800 sph
		Increased Target Stocking
	WFM Morice FSP 660	Pli leading
		Sx leading
SBSdw1	Cariboo Regional Standard	Enhanced Density

BEC Unit	Plan	Regime Name
		Enhanced Diverse
SBSdw2	Cariboo Regional Standard	Enhanced Density
		Enhanced Diverse
	Prince George FSP#11	Increased Target Stocking
SBSdw3	Prince George FSP#11	Increased Target Stocking
SBSmc1	Cariboo Regional Standard	Enhanced Density
SBSmc2	Bulkley ISS	Pli leading -1800 sph
		Pli leading-2000 sph
		Sx leading
	Prince George FSP#11	Increased Target Stocking
	WFM Morice FSP 660	Pli leading
Sx leading		
SBSmc3	Prince George FSP#11	Increased Target Stocking
SBSmh	Prince George FSP#11	Increased Target Stocking
SBSmk1	Prince George FSP#11	Increased Target Stocking
SBSmw	Cariboo Regional Standard	Enhanced Density
		Enhanced Diverse
	Prince George FSP#11	Increased Target Stocking
SBSvk	Prince George FSP#11	Increased Target Stocking
SBSwk1	Cariboo Regional Standard	Enhanced Density
		Enhanced Diverse
	Prince George FSP#11	Increased Target Stocking
SBSwk3	Prince George FSP#11	Increased Target Stocking

## Appendix VI Appraisal Log Dumps

Area	District	Marine (M) Natural (N) or Reservoir (R)	Water Body Name	Dump Location Name
NORTH	Coast Mountain	M	Devastation Channel	Heysham Creek
NORTH	Coast Mountain	M	Devastation Channel	Hugh Creek
NORTH	Coast Mountain	M	Devastation Channel	North Kitsaway
NORTH	Coast Mountain	M	Devastation Channel	Pike/Sleeman
NORTH	Coast Mountain	M	Devastation Channel	South Kitsaway
NORTH	Coast Mountain	M	Douglas Channel	Miskatla
NORTH	Coast Mountain	M	Eagle Bay	Eagle Bay
NORTH	Coast Mountain	M	Gardner Canal	Barrie Creek
NORTH	Coast Mountain	M	Gardner Canal	Collins Bay
NORTH	Coast Mountain	M	Gardner Canal	Kemano Bay
NORTH	Coast Mountain	M	Kildala Arm	Dala River
NORTH	Coast Mountain	M	Kildala Arm	Falls River
NORTH	Coast Mountain	M	Kitimat Arm	Minette Bay
NORTH	Coast Mountain	M	Verney Passage	Cheenis Creek
NORTH	Mackenzie	R	Williston Lake	Bear Valley**
NORTH	Mackenzie	R	Williston Lake	Centennial**
NORTH	Mackenzie	R	Williston Lake	Chowika**
NORTH	Mackenzie	R	Williston Lake	Factor Ross
NORTH	Mackenzie	R	Williston Lake	Ingenika
NORTH	Mackenzie	R	Williston Lake	Manson**
NORTH	Mackenzie	R	Williston Lake	Mesilinka
NORTH	Mackenzie	R	Williston Lake	Omineca
NORTH	Mackenzie	R	Williston Lake	Ospika**
NORTH	Mackenzie	R	Williston Lake	Swannell
NORTH	Nadina	R	Knewstubb Lake	Ootsa Cheslatta
NORTH	Nadina	R	Knewstubb Lake	Ootsa Deerhorn
NORTH	Nadina	R	Knewstubb Lake	Table Bay
NORTH	Nadina	R	Knewstubb Lake	Tahtsa Reach
SOUTH	Okanagan Shuswap	N	Shuswap Lake	Lee Creek
SOUTH	Okanagan Shuswap	N	Shuswap Lake	2 Mile
SOUTH	Okanagan Shuswap	N	Shuswap Lake	Wilson Creek
SOUTH	Selkirk	R	Arrow Lakes	Cayuse
SOUTH	Selkirk	R	Arrow Lakes	Fosthall
SOUTH	Selkirk	R	Arrow Lakes	Halfway
SOUTH	Selkirk	R	Arrow Lakes	Island Point-Gladstone
SOUTH	Selkirk	R	Arrow Lakes	Needles
SOUTH	Selkirk	R	Arrow Lakes	Octopus
SOUTH	Selkirk	R	Arrow Lakes	Renata
SOUTH	Selkirk	R	Arrow Lakes	Shelter Bay
SOUTH	Selkirk	R	Arrow Lakes	Snag Bay

\*\*Log Barge Water Transportation System



---

<b>Area</b>	<b>District</b>	<b>Marine (M) Natural (N) or Reservoir (R)</b>	<b>Water Body Name</b>	<b>Dump Location Name</b>
SOUTH	Selkirk	R	Arrow Lakes	Stobo
SOUTH	Selkirk	N	Slocan Lake	Rosebery
SOUTH	Thompson Rivers	N	Adams Lake	North end

**Appendix VII Amortization Agreement Form - Interior**



Ministry of  
Forests, Lands and  
Natural Resource Operations

**Amortization  
Agreement - Interior**

This document constitutes an agreement to distribute a portion of the development cost estimate included in the appraisal for the cutting authority indicated below to the tributary cutting authority or cutting authorities identified below in accordance with the *Interior Appraisal Manual* in effect at the time the agreement is signed.

The agreement must be reviewed and approved by the Regional Executive Director (or designate). A copy of this agreement becomes an integral part of the appraisal for each of the tributary cutting authorities identified below.

<b>Complete Legal Name of Licensee:</b>			
<b>Licensee Address:</b>			
<b>Licence:</b>	<b>CP:</b>	<b>Mark:</b>	<b>ECAS ID:</b>

<b>Project(s):</b> <i>(see attached)</i>	
<b>TOTAL COST ESTIMATE FOR APPORTIONMENT (\$):</b>	
<b>Licence and Cutting Authority</b>	<b>Amount Apportioned (\$)</b>
<b>Total Amount Apportioned (\$):</b>	

**This agreement is made for appraisal purposes only and does not confer any obligation on the Crown to compensate licensees for any unamortized costs.**

<b>Approved by Regional Executive Director or designate Name &amp; Title</b> (printed)	<b>Licensee Representative Name &amp; Title</b> (printed)
<b>RED or Designate Signature</b>	<b>Licensee Representative Signature</b>
<b>Date Signed</b> (yyyy-mm-dd)	<b>Date Signed</b> (yyyy-mm-dd)

FS 1422 HVA 2016/07 Please be advised that this information may be released under the *Freedom of Information and Protection of Privacy Act*

# Index

	<b>A</b>		Estimated Winning Bid	ii, iii, ii, iii, 3-1, 3-2, 3-3, 3-17
AAC		1-2	Exchange Rate	1-8, 3-10
ADS		i, 1-2, 1-14, 2-2	Existing Roads and Structures	4-7
Amortization		v, 4-7, 15		<b>F</b>
Annual Allowable Cut		1-2	Fencing	iii, 4-17
Applicable Volume		1-2	First Nation	i, 1-3
Appraisal Data Forms		i, 1-16	Forest Management Administration	iii, 4-3, 4-36
Appraisal Data Submission		i, 1-2, 1-14, 2-2	Forestry Licences to Cut	iv, 5-2, 6-6
Appraisal Map		i, v, 1-16, 11		<b>G</b>
	<b>B</b>		Geophysical Clearance Line Categories	v, 12
Barge Transportation		3-12	Grey Attack	ii, 3-8, 3-10
Basic Silviculture		6-5, 6-19		<b>H</b>
Blanket Salvage		iv, 6-12	Haul Method	ii, 3-10
Blowdown		iii, ii, 3-7, 3-10	Helicopter Logging	iii, 3-15
Bonus Bid		1-2	High Development Cost	iii, 3-15
Bonus Offer		1-2	Horse Logging	iii, 3-15
Bridge		iv, vi, 4-14, 4-15, 4-20		<b>I</b>
	<b>C</b>		Incidental Conifer	iv, 6-4
Cattle Guards		iii, 4-17	Indicated Rate	iv, 5-4
Certification		1-2	Insect Damage	i, 2-3, 2-6, 2-7
CFA		iv, vi, 6-3, 6-4, 6-8, 6-12, 6-13		<b>L</b>
Changed Circumstance		i, 1-2, 2-3	Levies	iv, 5-5
Comparative Cruise		1-3, 1-15	Licences to Cut	iv, 5-2, 6-6, 6-19
Controlled Recreation		iv, 1-3, 6-19, 6-20	Log Dump	v, 1-12, 13
Correctable Error		ii, 2-9	Low Grade Percent	iii, vi, 4-33, 4-34, 4-35
Cruise Based	i, ii, iv, v, vi, 1-3, 1-11, 3-8, 6-13, 6-14, 6-21			<b>M</b>
Cruise Based Salvage		iv, vi, 6-13, 6-14	Market Logger Cost	v, 4-36
Culverts		4-13, 4-19, 11	Minimum Stumpage Rate	i, 1-5, 1-9
Cycle Time		ii, 3-6	Miscellaneous Stumpage Rates	iv, vi, 6-17
	<b>D</b>		Mountain Pine Beetle	3-3, 3-8, 4-33, 6-13, 6-21
Damaged Timber		i, iv, vi, 2-3, 2-5, 6-10, 6-11	MPB	v, ii, vi, 1-11, 3-8, 3-10, 4-33, 4-34, 4-35, 6-13, 6-21, 6-22
Deciduous		iii, ii, iv, 1-3, 1-7, 3-7, 4-3, 4-26, 5-3, 6-4, 6-17		<b>N</b>
Decked Timber		ii, 3-9	Numbering and Calculation	i, 1-9
Detailed Engineering		4-20		
Development Cost Proration		v, 5		
Drainage Structures		iii, 4-13		
	<b>E</b>			
Effective Date		1-4, 2-7		
Equipment and Labour Rates		v, 2		

	<b>P</b>				
Parameters		i, 1-8, 3-3, 3-10		6-5, 6-19	
Partial Cut		ii, 3-10, 4-29		Skyline	iii, 1-6, 3-4, 3-14
Pipeline		iii, 4-17		Soil Moisture	v, 4-11, 4-12, 6, 7, 8, 9, 10
Point of Appraisal	i, vi, 1-10, 2-3, 3-12, 4-34, 4-35			Special Transportation	iii, 3-12
Post-Harvest Material	iv, vi, 6-10, 6-11			Specific Licences to Cut	iv, 6-19
Private Land	4-6			Specified Operations	iii, 3-11
				Stabilizing Material	iii, 4-16
	<b>R</b>			Stumpage Adjustments	i, 2-1, 2-8
Rail Transportation		3-12		Subgrade	iii, 4-9, 4-11, 4-12
Reappraisals		i, 2-1, 2-3		Support Centres	vi, 3-14
Redetermination		ii, 2-11			
Reserve Stumpage	iv, 5-4, 6-17, 6-18			<b>T</b>	
Return to Forest Management	v, 4-36			Timber Damaging Event	ii, 2-3, 2-4
Road and Land Use Costs	iii, 4-25			TOA	iii, iv, 4-1, 4-2, 4-36
Road Management	iv, iii, vi, 4-22, 4-23, 4-25, 4-26, 4-36			Transportation Route	i, 1-11, 1-12
Road Permit	iv, 1-6, 6-8			Tributary	1-4, 1-7
Rock	4-10, 2				
Root Disease	iii, 4-30			<b>U</b>	
				Uneven-Aged Forest Management	iii, 3-15
	<b>S</b>			Unsuitable	1-12
Salvage Timber		iv, 6-10, 6-14		Upset Rate	5-2, 6-14
Scale Based		i, 1-6, 1-11		Upset Value	v, 5-2
Selling Price	ii, vi, 3-3, 3-7, 4-28				
Silviculture	iv, iii, vi, 4-27, 4-29, 4-30, 4-31, 4-36,			<b>W</b>	
				Water Transportation	iii, 3-11
				Woodlot	iv, vi, 1-3, 2-8, 4-12, 6-3, 6-4